FLIGHT

MAGAZINE

Including SOUTHERN FLIGHT and MODERN AIRPORTS

OCTOBER 1951

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DETROIT

Graphic Growth is Shown for Local Service Airline Revenue Ton-Miles From 202,000 in 1945 to 21,480,000 in 1950 and About 40,000,000 estimated for 1951

6 YEARS OF LOCAL SERVICE AIRLINE GROWTH

See Special Section Beginning page 28

MID-CONTINENT AIRLINES

Serving the Heart of America

GENERAL OFFICES: 102 E. NINTH STREET, KANSAS CITY 6, MO.

"More than a full year of experience with the Model 240 Convair-Liners on our trunk routes has firmly convinced us that this is the type transport which properly meets the requirements of Mid-Continent's longer haul operations.

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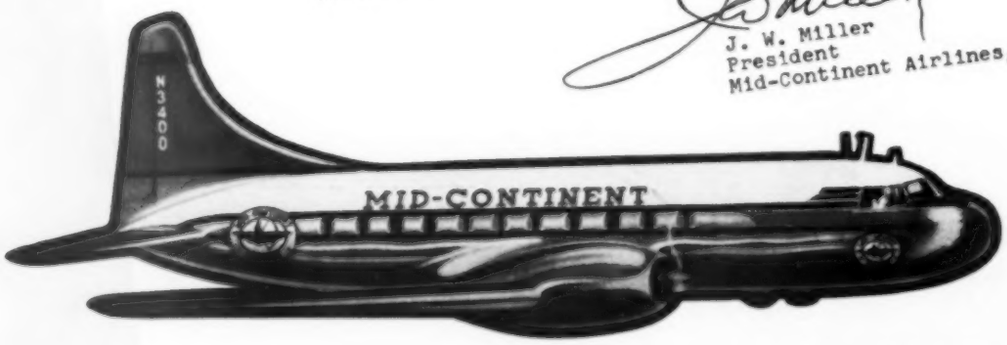
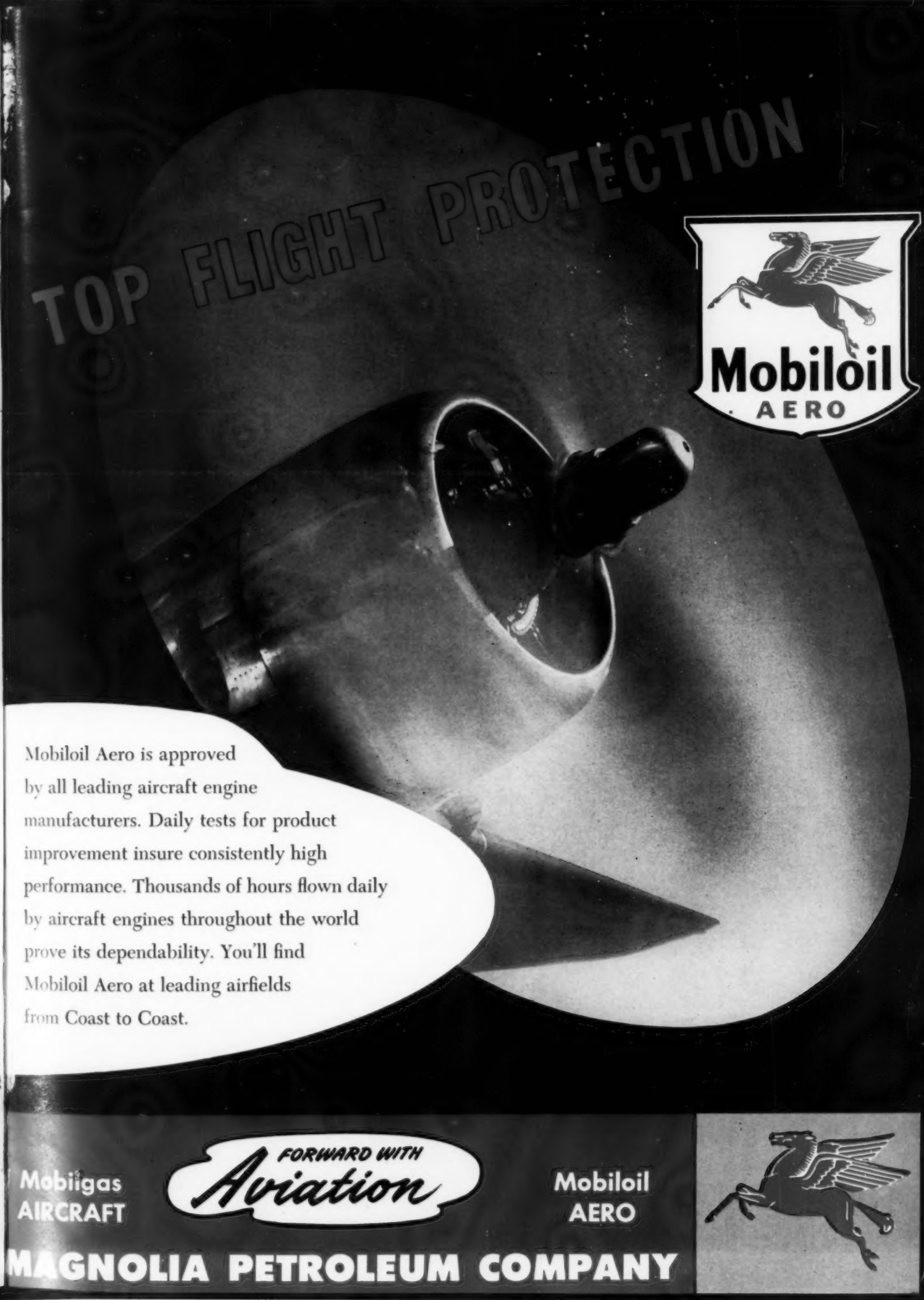
J. W. Miller
President
Mid-Continent Airlines, Inc.



IN THE AIR -- IT'S

CONVAIR

Consolidated Vultee Aircraft Corporation San Diego, California Fort Worth, Texas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Allison Turbo-Prop Engines Power 3 New Cargo Planes—

★ **The Lockheed XC-130**

★ **The Douglas R6D**

★ **The Lockheed R7O**

While testing continues with the first U.S. Turbine Transport—the Allison Turbo-Liner, built by Convair—military contracts have been awarded for the installation of Allison Turbo-Prop engines in three additional types of transport aircraft.

★ The Lockheed XC-130 — a U.S.A.F. four-engine medium cargo plane—is *the first military transport ever designed originally around Turbo-Prop power.* It won U.S.A.F. design competition over five other makes and the selection of Allison engines represents another *first* for Allison in the development of turbine transports in this country.

★ The new Navy-sponsored R6D is a modified configuration of the world-famous Douglas DC6A Liftmaster.

★ The Navy R7O is the new turbine version of the Lockheed Super Constellation.

Allison Turbo-Prop engines were selected for all three aircraft because they develop more power with less than half the weight of present engines in this power class.

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OPERATION POSTAGE STAMP!

Carcom Makes Navy Drop On Korean Coast

C-119's Free Drop Manila Rope and Cable From 300' Onto Postage Stamp Beach

HEADQUARTERS, FEAF COMBAT CARGO COMMAND, AIRLIFT BASE, JAPAN, (A.T.) ...In one of the most unusual airlift operations of the Korean campaign, troop carrier aircraft of FEAF Combat Cargo Command air dropped emergency supplies to U. S. Navy on the northeast coast of Korea at 1438 hours today.

Three C-119 Flying Boxcars of 314th Combat Cargo Command Wing, flying in close formation at the low altitude of 300 feet, free dropped 23,800 pounds of eight inch rope and steel cable on the narrow beach in the area of Iwon, some seventy miles north of the North Korean port city of Hungham.

ENGINE AND AIRPLANE CORPORATION

FAIRCHILD

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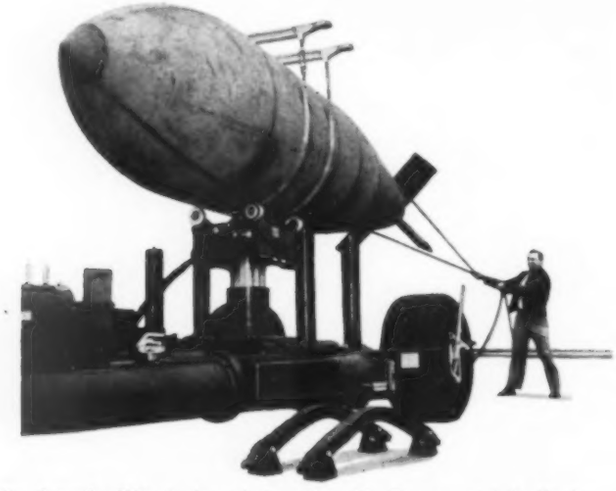
Flying an early Wright pusher plane, Lt. M. S. Crissy and Phillip O. Parmalee took off at San Francisco with the first explosive ever to be dropped from a U. S. airplane.

U. S. Army First Bomb Drop... January 1911



Hydraulic bomb lift, designed for the Air Force and built by Boeing, rests on a wheeled carriage which can be used to transport the bomb to the ramp and load it into the bay of the bomber. One man, operating the lift, can raise a 25-ton bomb 12½ feet, roll it 360° in either direction, shift it 4" either side of center and 10" fore or aft, and tilt it 6° up or down.

THE PICTURES tell the story of the development of the bomb, as a weapon of war, from the small hand-grenade stage (1911) to a giant explosive so large, so heavy, that it requires the use of a hydraulic lift to load it into the bay of the plane.

In the intervening years, our entire aviation industry has progressed with astonishing rapidity, and the makers of fuels and lubricants have kept pace. Phillips Petroleum Company, pioneer in the field of special aviation gasolines and lubricants, has long been one of the country's largest suppliers of aviation fuels for commercial and military use. And now Phillips is ready with new fuels for turbo-props and jets in addition to its tremendous capacity for producing 115/145 grade aviation gasoline. The Aviation Department, Phillips Petroleum Company, Bartlesville, Oklahoma.

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AIR Report

Significant Trends and News

IMPORTANT COMMERCIAL AIRCRAFT GAS TURBINE DEVELOPMENTS can be expected from Continental Motors which has purchased a wide range of French jet power plant designs. Nine turbines in the "family" span a power range of 200 to 1,100 hp. Military applications will include guided missiles, helicopters, target planes, utility aircraft and air compressors. Jack Reese, president, says the new turbines eventually will increase "far beyond present limits" the capacity and usefulness of medium-sized utility aircraft used commercially. "One turbine model, a ducted fan, when installed in a 4-pl. aircraft with other characteristics about the same as present lightplanes of that type, will make possible a cruising speed of about 300 mph. compared with 170 mph. at present," Reese said, without identifying the aircraft design.

PILOTLESS BOMBERS are among the "fantastic" new weapons mentioned recently by President Truman. First such bombers revealed are expendable Glenn L. Martin B-61 "Matador" aircraft. Having no cockpit, they are launched by rocket, cruised on jet power and guided by mother aircraft. On Oct. 1 USAF activated its 1st Pilotless Bomber Squadron (Light) at Cocoa, Florida, an operational unit equipped with Martin Matadors.

FIRST ATOMIC AIRCRAFT ENGINES may be produced in Texas near the Fort Worth factory producing Convair B-36's, to which contract for the first atomic-powered airframe has been awarded. . . . **NAVY CARRIER PLANES** are to carry atomic bombs and specialized air and carrier crew training is under way.

THE PENTAGON IS BECOMING MORE OPEN MINDED on the subject of possible civilian flight and technician training programs, beginning to admit deficits might crop up to seriously affect USAF, Navy and Army air expansion programs. Industry's responsibility now is to come up with realistic, definite proposals after surveying such deficits. Congress is moderately sympathetic also.

PROPOSED CHANGES IN MATERIAL CONTROL PROGRAMS and overhaul of organizations now responsible for allocations could seriously endanger the flow of critical parts and materials necessary to keep civil aviation healthy. Since more than 90 per cent of all manufacturing facilities are geared to military production, study is being given the proposition that non-carrier civil aviation (now a consumer-goods, "B" product under CMP regulations) should be handled as an "A" product as a part of the flow of military materials, so small are the actual requirements in poundage. Chief worry now is that military might demand 100 per cent utilization of labor and production facilities irrespective of the materials problem. Greatest loss so far: No more design improvement as engineers are scarcer than hen's teeth.

BEECHCRAFT TWIN-BONANZAS will be used by the Army Ground Forces on a lease basis covering several planes. USAF is said to be planning purchase of about 40 Twin-Bonanzas—for use as staff transportation.

AIR MAIL SUBSIDIES ARE NOW BEING IDENTIFIED IN DOLLARS AND CENTS by the CAB. First such report reveals $718,726,000 in Post Office revenue from air mail postage since 1938 compares with $775,031,000 total U. S. payments to domestic airlines during the 13-yr. period. Excess involved amounts to less than $4,331,000 annually as the total cost for the world's greatest airline industry.

IOWA'S RECENT PRACTICE CIVILIAN AIRLIFT, a test of civil air defense capabilities, drew participation by 411 civil planes which flew 172,000 lbs. of cargo into Des Moines. It followed a simulated bombing attack on the city. Norb Locke's Iowa Aeronautics Commission sponsored the test.

POSTWAR TRANSPORT SALES RECORD of Douglas Aircraft has soared with American Airlines pur-

(Continued on page 56)

FLIGHT MAGAZINE

Including SOUTHERN FLIGHT and MODERN AIRPORTS

OCTOBER, 1951 VOL. 36, No. 4

COVER: Phenomenal progress of local air service during the last six years is charted on this month's cover, showing the growth in local service airline revenue ton-miles to have doubled during the last year. Pictured in the background is a Trans-Texas Airways DC-3.
—(FLIGHT MAGAZINE Photo.)

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GEORGE E. HADDAWAY, Editor-Publisher; TOM ASHLEY, Managing Editor; FRED N. STONES, JR., Business Manager, P. O. Box 750 (1901 McKinney Ave.), Dallas, Texas
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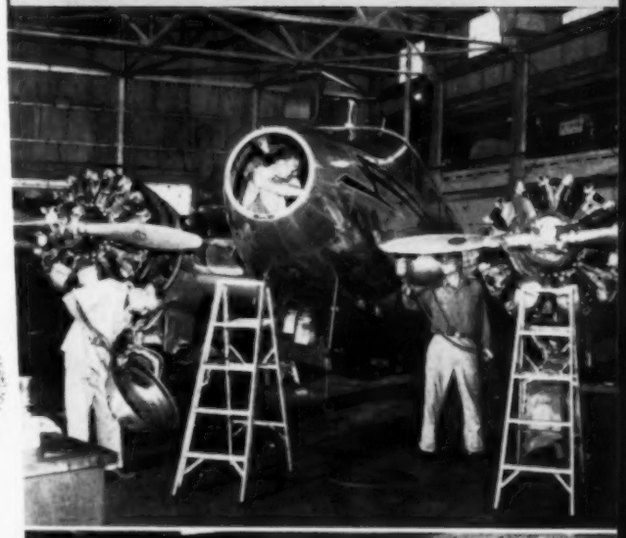

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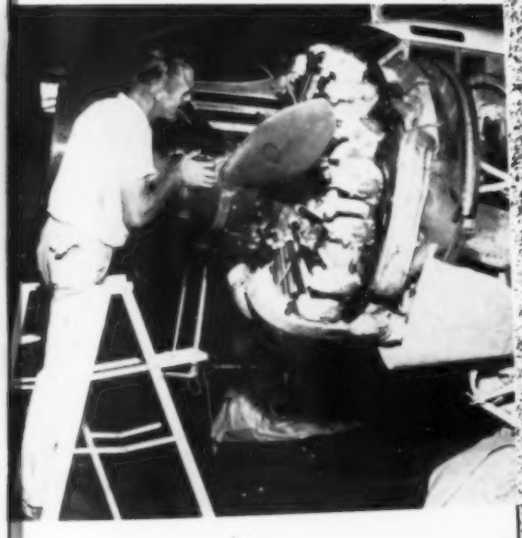

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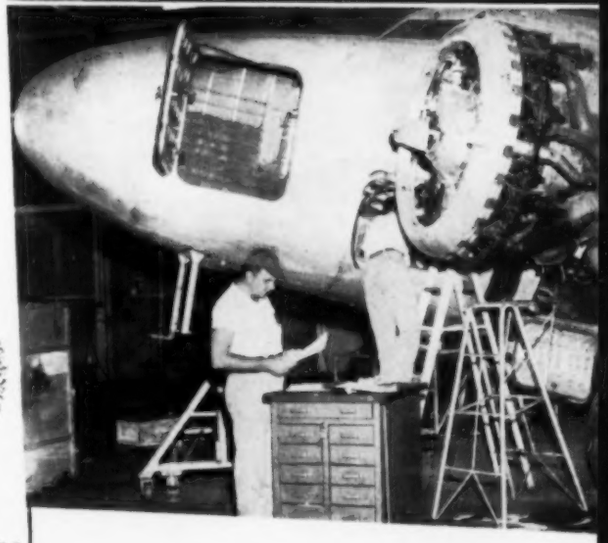

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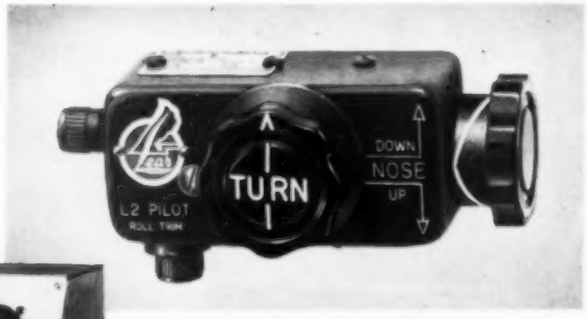

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VOUGHT CORSAIRS flew 13,120 of a total of 16,000 close air support sorties made in the first 11 months of the Korean War by Navy and Marine Corps pilots. This further underlines the soundness of design which still makes the F4U Corsair one of the world's finest fighter-bombers after 11 years of service.

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EDITORIALS

WELL DONE, MR. RENTZEL!

THE blueprint for the rapid mobilization of civil aviation in case of all-out war has been completed, and the period of implementing the plan has begun. Under-Secretary of Commerce D. W. Rentzel made the first release of the blueprint last month before the Conference of National Aviation Organizations meeting at Patuxent Naval Air Test Center near Washington.

Over 1,000 recognized industry, government and military officials contributed to the master plan which was initiated under the old National Security Resources Board a year ago as the Air Transport Mobilization Survey, which covers five basic areas—Air Transport, Training, Overhaul and Maintenance, Industrial, Business and Agricultural Aviation, Airports and Airways. The Office of Civil Aviation Mobilization is the action group now implementing the plan under Rentzel's guidance. This office is now scheduled to become the Defense Air Transport Administration with more power to advise and take action on the mounting task of implementation.

Those of us who remember the tragic waste of our aeronautical resources and the silly restrictions imposed after the attack on Pearl Harbor ten years ago perhaps appreciate the foresight, energy and intelligence behind the blueprinting work for civil air mobilization more than run-of-the mill citizenry. But the entire nation should take pride and satisfaction in the fact that one branch of the government, the Department of Commerce, has joined hands with a vital industry and prepared a realistic plan for any eventuality. In these days of bitter criticism of government bungling, waste and political chicanery, it is heartening to see democratic cooperative forces at work for the total good.

Secretary of Commerce Sawyer, and particularly Delos Rentzel and his mobilization staffs and committees, deserve the genuine thanks and appreciation of the entire aviation industry. The best way to demonstrate that appreciation is continued industry and military cooperation with the new agency, DATA, and to assist in implementation at every possible opportunity.

AIRLINES LET THE AIR MAIL USERS DOWN

DESPITE the fact that air mail revenue to the Post Office Department just about covers cost of transporting it, the cards are stacked for increasing air mail postage rates from six to eight cents. This obvious discrimination against air transportation is even more bitter to take when you realize it's a sign of weakness within the air transport industry. The aviation interests who should have put on a good fight fell flat on their faces. Staunch friends in the U. S. Senate found little help when the cards were down.

From where we sit it looks as though the airlines are so busy fighting each other they are impotent to stand together on a matter as important as increased air mail postage rates. The history of such increases has always been a reduction in the use of the service.

If the airlines think they can leave such fights up to the small handful of people on the Air Transport Association staff in Washington they are sadly mistaken. As capable and experienced as that staff might be there is no substitute for a vigorous campaign among the thousands upon thousands of air mail users throughout every town and city in the nation. These folks weren't even informed or advised that the increase was imminent. They would have fought.

Is it that our airline management like so many other groups in these fantastic times just can't stand prosperity?

THE COST OF ENORMITY IN A CRISIS

SPEAKING before the American Bankers Association recently in what certainly is one of the most brilliant aviation addresses delivered in recent years, Bob Gross, president of Lockheed, had this to say:

"When you see a beautiful new airplane standing on the runway gleaming in its glory and just off a production line, you see an article that, I think, epitomizes the longest, the most complicated and the most far-flung production effort of all time. I'm speaking now about articles that we make in some respectable quantity production. A battleship is complicated and takes a long time—but we only make one or two. And the airplane is no longer just a frame—an engine, and a propeller. The end product that we call the airplane is really an assemblage of thousands of individual products, each of which has to be invented, developed, manufactured, and then housed in the mother structure that itself has to be invented, developed, adapted, tooled, and manufactured. This long and costly process represents a time cycle of 5 to 7 years for the mother structure itself, to say nothing of the years of development of the various systems, accessories, and installations that make the whole an integrated thing. All these thousands of manufactured products have to be seasonably fed into the master plane production process. Everything has to be there at the right time. The parts and pieces come from every state in America and some from foreign countries.

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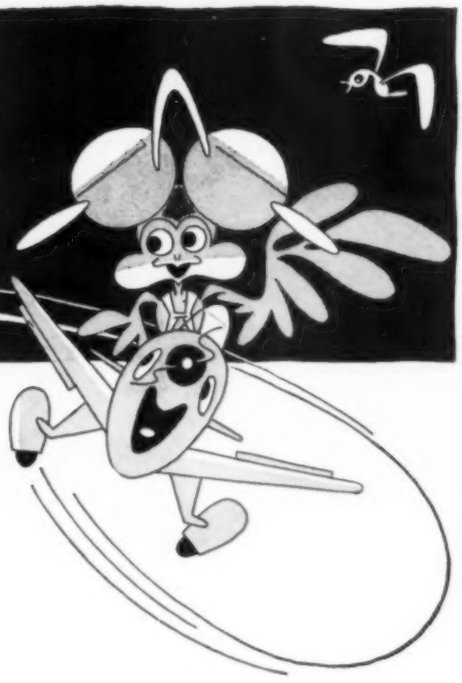
What's the right oil for *your* airplane engine?



You've heard so much about aircraft oils you probably want to know which one is best for *your own engine*. Good idea. You'll fly more safely, no matter what type of engine your plane has, if you use the *right* oil for your engine type. For example:

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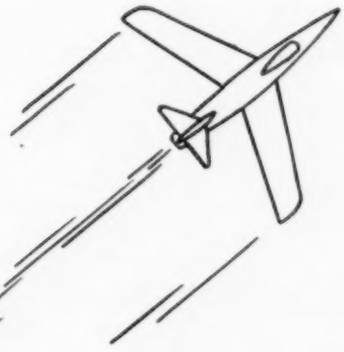

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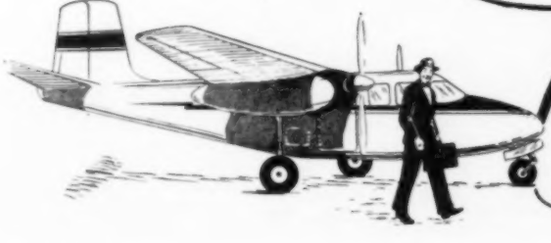

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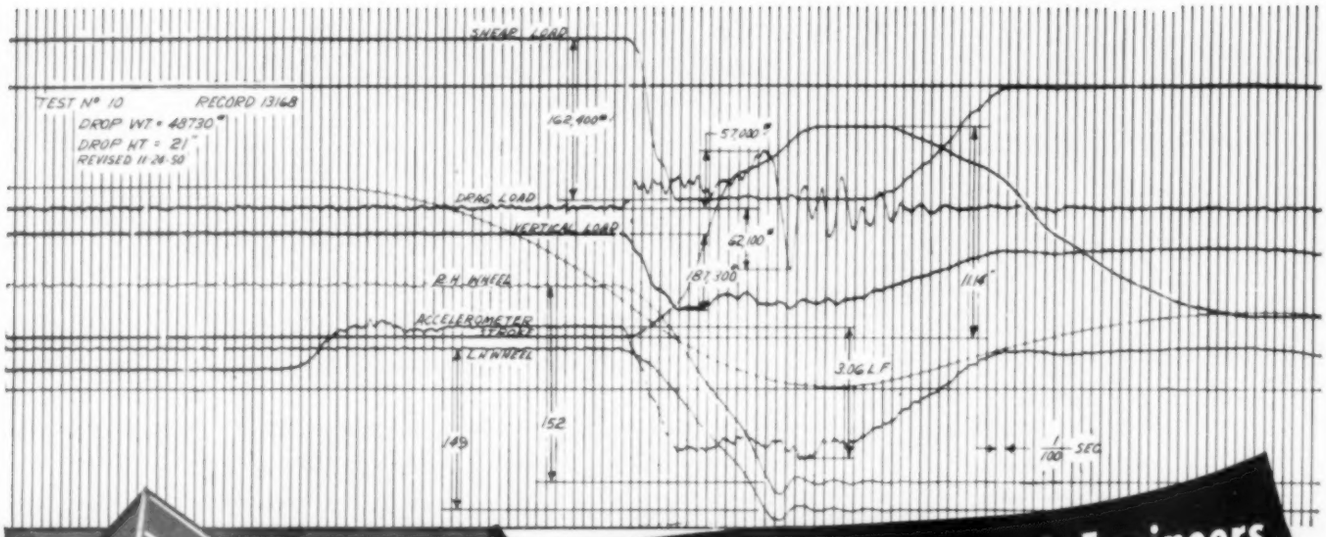
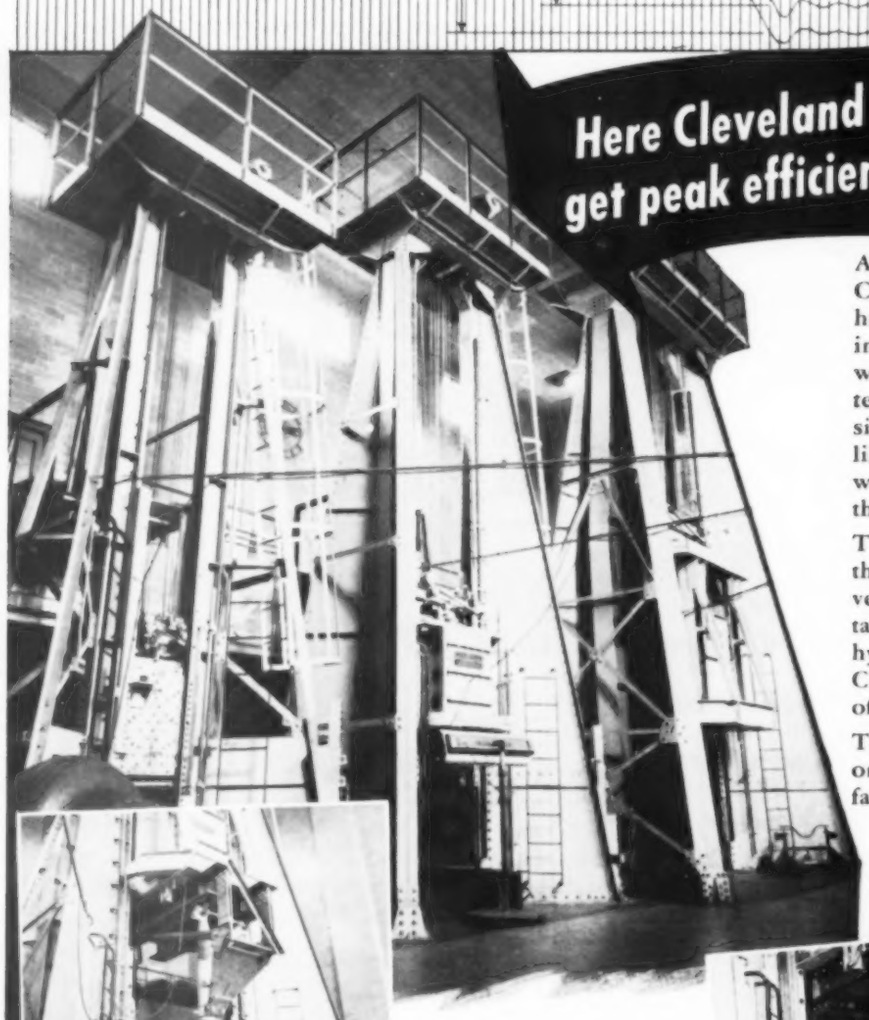


Here Cleveland Pneumatic Engineers get peak efficiency from Aerol Struts



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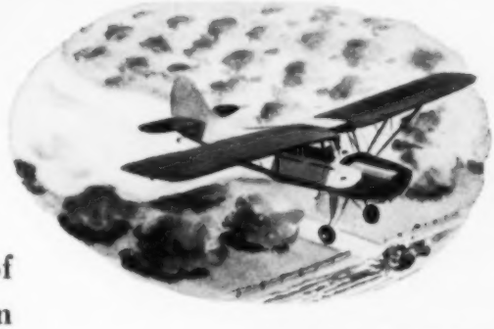

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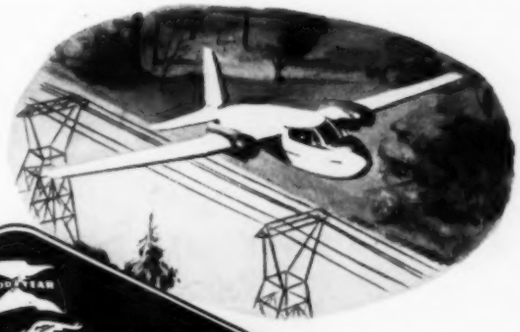

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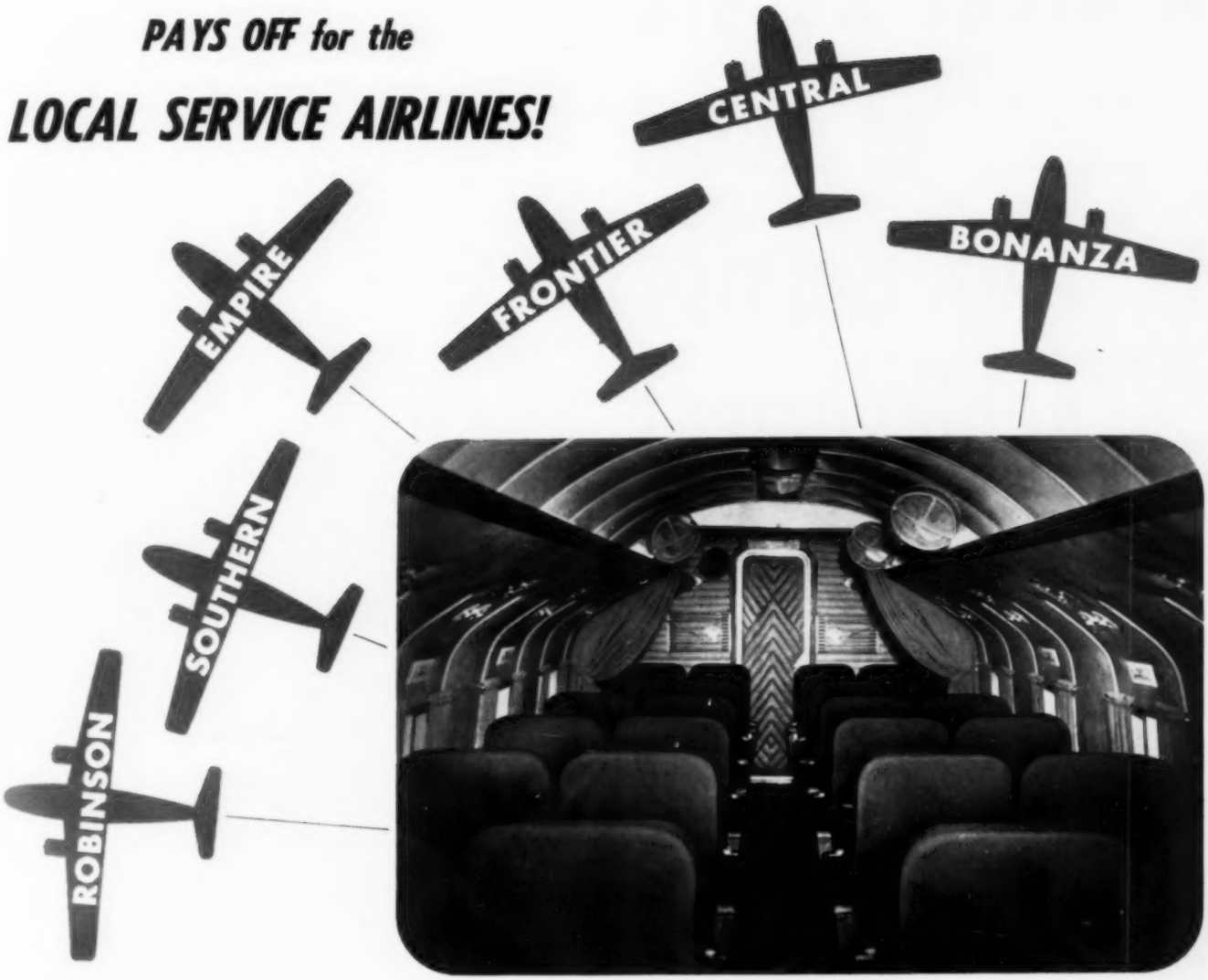

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A Great Record of Local Air Service Achievement

AN EDITORIAL

THIS issue of FLIGHT MAGAZINE graphically portrays one of the most phenomenal growth stories in U. S. civil aviation history—the six-year record of local scheduled air service, now composed of seventeen certificated carriers linking scores of smaller communities of the nation with established trunk-line terminals. While the amazing facts and figures herein published speak for themselves, cold, analytical figures do not alone tell the story of this postwar development which is bringing vigorous new blood into our domestic air transport pattern.

Perhaps the best recent example of the local carriers' vigor lies in last month's action by the United States Senate, voting 62 to 14 in favor of an amendment to the separation of subsidy from mail pay bill, empowering the Civil Aeronautics Board to enter into three-year contracts with local service carriers. This action amounts to a virtual exemption from the dangerous provisions of the act that call for annual review of mail rates and the establishment of a year-to-year, hand-to-mouth subsidy appropriation by Congress. The local service people worked earnestly for this life-saving amendment and discovered, perhaps to their own surprise, that the grass roots still have power in the U. S. Senate.

If the local service carriers can show that kind of strength it follows that they will find an early solution to their equipment problem. They are the only segment of transportation that has not been able to procure new and modern equipment since the war. It is difficult to estimate just how much the government is paying out in subsidy just because the local service people have to use obsolete DC-3 equipment, but competent experts figure the amount in the minimum range of ten millions annually in actual direct operating costs. A modern airplane could be developed for about six months' subsidy payment. Better service and faster schedules are bound to produce more non-

(Continued on page 32)

Retired from trunk airlines and military operations as obsolete, familiar Douglas DC-3 transports identify the local service airlines. No suitable replacement transport is available. This one is operated by All American Airways.

An Appraisal of Local Air Service

A commentary on the current position of the local airline system by the CAB chairman

By DONALD W. NYROP
Chairman, Civil Aeronautics Board

CERTIFICATED local air service operations within the United States today are an experimental project authorized by the Civil Aeronautics Board following World War II. Most of the original certificates granted by the Board authorizing such local air transportation were for a temporary period of three years; some have been extended for further temporary periods. One has been allowed to expire. As in any long range experimental project it is necessary periodically to appraise the information and experience that has been accumulated. It is my intention here to set forth such a periodic appraisal.

When the local service experiment was launched, the Civil Aeronautics Board had little factual information concerning local air service. Indeed, the lack of such information was highlighted in the Board's opinion resulting from its investigation of local feeder and pickup air service (Docket No. 857) issued July 11, 1944. At that time the Board found that good, frequent, and cheap ground transportation would be a vigorous and powerful competitor to local air service. The record indicated that the airplane used in local service would lose its greatest utility of speed because of the inherent nature of its short-haul operations between small cities. The Board said, too, that because of the relatively low traffic potential between small cities, the most stringent type of operating economies must be developed and practiced.

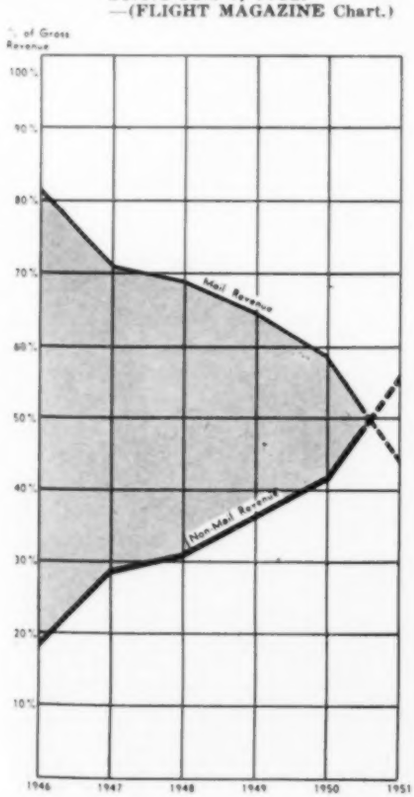
Nevertheless, the Board concluded after studying the record that it had an obligation to encourage and develop air transportation as set forth in the Civil Aeronautics Act of 1938, and consequently decided to obtain the necessary information operationally as well as economically by bringing into existence a local airline system. This local system was designed to bring scheduled air transportation to hundreds of smaller cities and towns throughout the nation and to feed additional traffic into the 16 domestic trunk airlines.

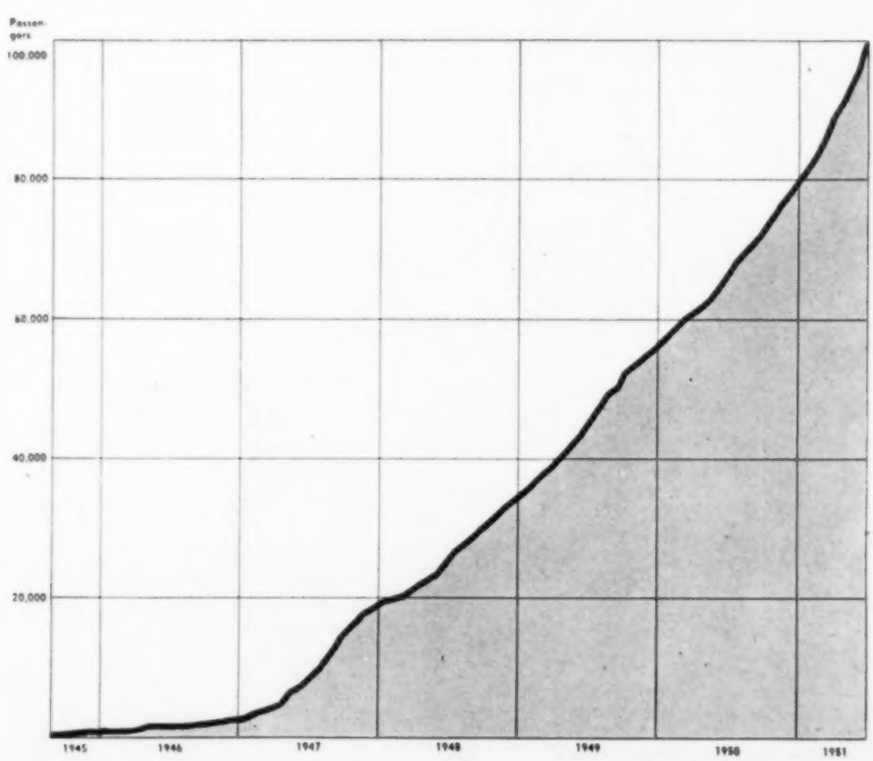
Rapid Growth Accomplished

Now, while local service certificates are coming before the Board for renewal, is an appropriate time to present the current position of local air service in the United States.

As a result of the experiment launched by the Board there are now 17 local service carriers certificated for local operations. The earliest operation began on August 1, 1945, and

Local air service mail and non-mail revenues had almost reached a balance by June 30,1951. Chart below shows anticipated trend, with non-mail revenues for the first time exceeding mail payments before Jan. 1, 1952.
—(FLIGHT MAGAZINE Chart.)





Sharply mounting passenger traffic during six years of local air service operations shows growing acceptance and use of local carriers by traveling public. This graph charts the number of passengers carried per year ending each month, thus establishing a 12-month "moving average" which eliminates seasonal peaks and valleys and establishes the correct trend of growth. Note increasing steepness of the chart for the first half of 1951.
—(FLIGHT MAGAZINE Chart.)

Local Service Airline Traffic, 1945-1951

Year	Revenue Passengers	Revenue Passenger Miles (000)	Passenger Load Factor	Air Mail Ton-Miles	Express Ton-Miles	Freight Ton-Miles	Total Rev. Ton-Miles (000)
1945	4,452	1,312	52.78	74,510	11,482	.....	202
1946	25,118	6,812	37.92	60,088	24,354	25	688
1947	235,585	46,418	29.85	167,564	117,523	62,039	4,682
1948	425,695	87,928	27.14	361,984	189,550	264,794	9,040
1949	683,811	136,560	28.47	432,628	320,143	435,993	14,328
1950	987,931	200,903	33.07	559,085	614,139	714,346	21,480
1951, 1st half	684,240	145,344	38.43	360,418	469,546	457,974	15,356

the carrier which most recently started service did so in September, 1950. The number of certificated points has increased from 165 in 1946 to 490 in 1951.* The local service carrier certificated route mileage has grown from 7,682 in 1946 to 28,008 in 1951. Mail ton-miles have increased from 20,738 to 662,407 and the number of revenue passengers has increased from 12,502 in the year 1946 to 1,198,661 in the fiscal 1951. Express and freight ton-miles have increased from 3,240 in 1946 to 1,638,530 in 1951, and revenue passenger-miles flown from 3,680,000 to 234,229,000.

Record Is Encouraging

The foregoing statistics indicate the rapid growth of the local service industry within the past six-year period and the record here presented in capsule form is, in many respects, encouraging. It shows a slow but steady increase in public acceptance of the airplane as a vehicle for relatively short-haul travel and an increasing reliance upon air transportation in the carriage of property and mail. Furthermore, although the mail payments received by the local service carriers have reached a total of slightly less than $17,000,000 in 1951, the cost in U. S. mail pay per passenger-mile has decreased from 10.75 cents in 1946 to 7.20 cents in 1951. Commercial revenues have increased from $176,695 in 1946 to $14,943,834 in 1951.

When the local service carriers are considered from the point of view of contributions made to the national defense in the form of a reservoir of airplanes and trained personnel, it will be seen that from a beginning of three airplanes in early 1946, the fleet has grown to 125 airplanes in 1951. These aircraft are generally the DC-3 type which formed the backbone of the trunkline equipment at the start of World War II. The number of DC-3's in operation by the local service carriers as of the end of 1951 would supply the equivalent of the lift which was commandeered by the armed forces from the trunklines at the beginning of the war. Similarly, the local service carriers employ almost 5,000 trained personnel in 1951 as compared to 220 in 1946. Here exists a reservoir of men gifted with air transportation experience who are keeping their skills alive through the medium of the local air service carrier.

Quite apart from the advancements made by the local service carriers which can be demonstrated with cold statistics there is no doubt, as is demonstrated from the records compiled before the Examiners of the Board in the local service carrier renewal cases, that the local service airlines, especially in isolated and sparsely settled territory, have come to supply the need for quick transportation in order to meet local emergencies such as the failure of municipal plant facilities, and to meet the rush requirements for drugs and other medical supplies.

Self-Sufficiency Stressed

On the other hand, there is no getting away from the fact that the sum of $17,000,000 which was expended in 1951 in the form of mail pay to the local service carriers, a large part of which we have labeled "subsidy" in our recent report to the President and the Congress, cannot continue indefinitely to be paid by the Federal government to support the local service industry. While I believe that so far the monies expended by the government have been well spent, it is incumbent upon the Board to weed out those local service carriers who do not offer a reasonable prospect of ultimately achieving commercial self-sufficiency or at least of reducing their subsidy requirements drastically. To this end the Board has during the past year advised the local service carriers they must increase their non-mail revenues and reduce their expenses wherever possible in order to achieve a more favorable mail-pay ratio. This advice simply must be taken to heart if a major part of the local service carrier industry is to survive.

Several ways are open to the local service carriers to accomplish this result:

1. *Some of the carriers ought to be able to achieve additional economies which will make their operations less expensive.* This is a field in which individual company initiative is capable of producing far better results than any sort of regulatory activities on the part of the Civil Aeronautics Board. We recognize that many of the local service carriers have pioneered improvements in air transportation services which should result in lesser costs of operation. We think that every means possible should be adopted further to pursue the quest for economy and

*The vast majority of certificated points appear in local service certificates.

Local Service Airlines Growth, 1949-1950-1951

(Comparative Operating Statistics for First Half of Each Year)

	First Half 1949	First Half 1950	Per Cent Increase	First Half 1951	Per Cent Increase
Revenue Plane Miles	10,146,161	15,291,931	51	18,940,810	23
No. of Revenue Passengers	279,238	388,254	39	684,240	76
Revenue Passenger Miles (000)	57,215	79,611	39	145,344	82
Available Seat Miles (000)	202,119	275,202	36	378,185	37
Revenue Passenger Load Factor	28.31	28.93	2	38.43	32
Mail Ton-Miles	182,895	246,511	35	360,418	46
Express Ton-Miles	113,889	238,185	109	469,546	97
Freight Ton-Miles	193,431	303,441	57	457,974	50
Total Revenue Ton-Miles	5,890,455	8,530,742	45	15,356,000	80
Available Ton-Miles (Revenue Flights Only)	23,067,840	31,276,239	36	39,482,013	26
Revenue Ton-Mile Load Factor	25.54	27.28	6	38.89	42
Number of Aircraft	79	118	49	130	10
Average Available Seats (21 Seats for DC-3)	19.92	18.00	—10	19.29	7

Local Service Airlines Financial Growth, 1946-1951

Year	Passengers	% of Total	Mail	% of Total	Express and Freight	% of Total	Other	% of Total	Total %
1945	$ 314,638	16.29	$ 1,558,614	80.71	$ 13,008	.67	$ 44,797	2.22	100
1947	2,280,124	26.99	5,957,097	70.51	60,179	.71	150,931	1.79	100
1948	4,666,549	28.64	11,282,490	69.25	147,159	.91	195,511	1.20	100
1949	7,362,007	33.55	14,054.998	64.88	252,159	1.11	271,466	1.23	100
1950	10,302,859	36.94	16,384,321	58.74	442,046	1.58	763,718	2.74	100
1951, 1st half	7,189,924	41.53	8,863,087	51.20	317,089	1.83	942,310	5.44	100

improvement of service. By way of example, the carriers might well consider serving two or more closely adjacent points through a single airport.

2. *The major field in which the local service carriers have an opportunity to reduce the cost to the government is in the field of increasing commercial revenues.* It is quite clear that the potential market for local air transportation in this country has not yet been tapped to its fullest extent. The public must be encouraged to use the local service carriers. Every effort must be made by the carriers to assure that each advertising dollar brings a commensurate increase of business to the company.
3. *It has been generally recognized that the DC-3 transport aircraft is not particularly suitable for a local air service.* Yet this airplane is the backbone of the local service operation and it has served the local service carriers well. However, it is to be hoped that some of our American aircraft manufacturers will come forward with a multi-engine design for local air service that will make possible increased flight efficiency and serviceability with operating economies. *Unless they do so, it is possible that we will see an infiltration of foreign design transport airplanes on our local air carrier systems.*
4. *The Board recognizes that there are certain areas in which the Board itself can and should act in order to improve the opportunities of the local service carriers.* As the Board has indicated several times it is incumbent upon local service carriers as their certificates come up for renewal to bring into issue in the proceedings such reasonable route changes and modifications as will result in a more feasible operating pattern for the local service carriers. This is not to say that the local service carriers should forget the purposes for which they were certificated, but it is to indicate that the Board is sympathetic to re-

(Continued on page 36)

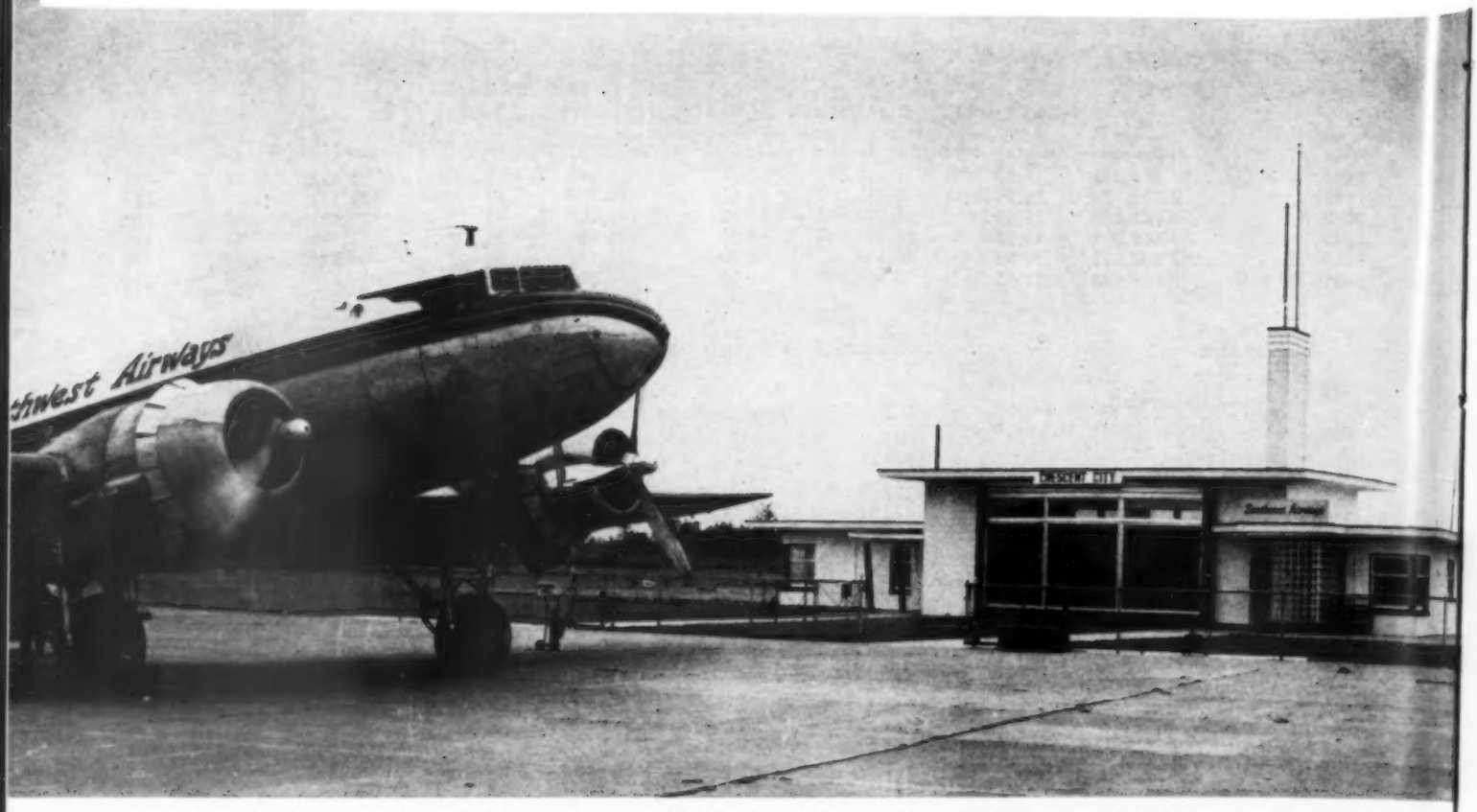
Local Service Airlines Operating Expenses, 1946-1951

Year	Aircraft Op. Expenses	% of Total	Ground and Indirect Expenses	% of Total	Total Operating Expenses
1945	$ 999,175	48.49	$ 1,064,254	51.65	$ 2,060,429
1947	4,462,227	49.20	4,607,078	50.80	9,069,305
1948	8,321,371	52.26	7,602,141	47.74	15,923,512
1949	11,810,777	52.77	10,570,938	47.23	22,381,715
1950	13,453,647	49.25	13,863,096	50.75	27,316,743
1951, 1st half	8,224,897	47.67	9,030,355	52.33	17,255,252

Local Service Airlines Direct Operating Expenses, 1946-1951

Year	Flying Operations	% of Total	Dir. Maint. Flight Equipment	% of Total	Depreciation Flight Equipment	% of Total
1946	$ 497,438	24.14	$ 347,727	16.88	$ 151,010	7.33
1947	2,203,155	24.29	1,336,677	14.74	922,395	10.17
1948	4,526,827	28.43	2,348,309	14.75	1,446,234	9.08
1949	6,486,969	28.91	3,280,965	14.66	2,042,843	9.13
1950	8,482,742	31.05	3,476,759	12.73	1,494,146	5.47
1951, 1st half	5,354,133	31.03	2,081,087	12.06	789.677	4.58

Even such commonplace things as cream flies by local service carriers. Frontier Airlines' large, specially-designed cargo compartments make it possible for many shippers in the Rocky Mountain area to ship materials which would normally move via surface transportation. —(Frontier Airlines Photo.)



Crescent City, California, population 1,689, has been served by Southwest Airways since September 1, 1948. During the 12 months ended June 30, 1951, this town generated 3,345 passengers, or 2.3 passengers per capita. In other words, local traffic was the equivalent of every resident having ridden the airline more than twice during the year.
—(Southwest Airways Photo.)

Looking to the Future

By JOSEPH J. O'CONNELL, JR.

A practicing Washington attorney and former chairman of the Civil Aeronautics Board, under whom many local service certificates were granted.

PROBABLY at no time since the concept of local service carriers was first given serious consideration as a logical and intelligent development in the evolution of a mature, yet dynamic, system of air transportation has there been as high a note of sustained confidence as to the success of such operations as is to be found today.

Certainly, in contrast to those earlier, darker days of 1947-1948, and even 1949, when only a handful of pioneering zealots were other than at least apprehensive if not downright disheartened, the future of local service operations seems relatively assured.

With only one known casualty among operating carriers (Florida Airways) the Civil Aeronautics Board has, it seems to me, indicated quite clearly by its actions in the various certificate renewal cases, as well as by statements of policy made on other recent occasions, its belief in the fundamental soundness of the concept it began to explore in 1943 and 1944. As Chairman Nyrop has recently stated, *"the local scheduled air carrier operation has come to stay."*

That is not to say, however, that there are not currently and that there will not continue to be problems of no mean magnitude that will have to be faced and mastered by the local service operators.

We all realize that there are inherently difficult economic problems which will continue to plague the industry and that no panacea exists or will be found which will render such problems moot. And we all recognize and should remember that only by the continuing application to the various problems confronting the industry of all the ingenuity as well as enthusiasm of all the major participants in it can a sound future be assured.

Thus, in the processing of the various renewal applications, the Civil Aeronautics Board, quite wisely it seems to me, has explored and will continue to explore the possibilities of further assuring a sound future for these carriers through changes in their respective route patterns as well as such other changes in existing authority as would appear calculated to encourage and develop an air transportation system which will satisfy the requirements of the foreign and domestic commerce of the United States, the Postal Service, and the national defense. The carriers themselves undoubtedly recognize this and should feel doubly encouraged that the Board is making intelligent use of its own processes to achieve that long-range objective.

Future Up To Carriers, Not CAB

Fundamentally, however, the future of the local carrier operation lies not in the CAB, but in the minds and hearts of the local service operators themselves. The Board was never intended to nor should it contemplate providing more than the type of guidance and assistance it has indicated it believes to be within its field of responsibility. The legislation under which it operates was intended to provide a regulatory technique both in the economic and safety field which would give the greatest possible opportunity to permit the development of air transportation through the ex-

ploitation of the sum total of the individual abilities and energies found in the industry.

Although few airline executives would be inclined to agree with me, it seems to me that the CAB over the years since its creation has succeeded admirably in walking along a very difficult line. Its problem has been to regulate without directing, to guide without driving, and to influence without dictating—in short, to regulate an industry in the public interest without at the same time destroying the advantages known in this country to be inherent in free competitive enterprise.

The primary long-range problem with which the local service carriers must continue to deal is, of course, the relationship between non-mail revenues and expenses. Stated another way, economic self-sufficiency, at least as a reasonably attainable goal, must be a consideration constantly of concern both to those who operate local service carriers and the many who believe in their future.

Cost Cutting Has Limits

In this connection, it is hardly necessary to point out that cost reductions have very definitely limited possibilities and, particularly since the local service carriers have strained themselves and are justifiably proud of their record in this area, eyes should be turned more and more to the development of traffic. "Use it or lose it" is far from an empty phrase. Then, too, relatively low seat-mile costs are unimpressive and in fact only slightly meaningful except when read together with the statistics on load factors.

Sympathetic as the Board has apparently been with respect to this type of operation in air transportation, it would be far too much to expect that they would not be continuously conscious of the economic aspects of it. In this connection, it is worthy of note that the Board has consistently emphasized the paramount importance of this factor notwithstanding 9 changes in Board membership since the beginning of the experiment. Thus the Board will doubtless continue to press toward the objective of a greater and greater degree of commercial self-sufficiency as a *sine qua non* to the ultimate desirability of continued authorization of service. How else can the Board's consistent policy of temporary certificates in all renewal cases be explained?

This, it seems to me, would be true even in the absence of current pressures to reduce the amount of Government support required to sustain air transportation in general and local carrier operations in particular. The recent agitation for subsidy separation legislation is the most outstanding example of the type of pressure to which I have referred. More about that later, but at this point it would seem only appropriate to point out that in the *Southwest-West Coast Merger Case*, decided by the Board as recently as August 7, 1951, the Board took occasion to include what I would think to be a considered statement of its views. I quote:

> "The Board has been concerned with the failure of some feeder or local service operators to reach or in some cases to even approach commercial self-sufficiency. It has recognized that this situation may be due in part to the weaknesses in the route structures of such carriers. The Board has been exploring the possibilities of retaining service to local communities at minimum governmental cost through various remedial devices, including the elimination of notably uneconomic stops and the redistribution of routes and stations between competing carriers at smaller cities. In orders to show cause initiating various renewal and suspension proceedings for local service carriers, the Board indicated primary concern over the cost handicaps of local service, particularly the short haul, the extreme variability and unbalance of traffic and the light traffic density of typical feeder stations. To improve feeder revenue/expense relations the Board's show cause orders proposed, among other things, the revision of routes to permit more advantageous scheduling and the extension of routes, under certain conditions, to include larger traffic centers."

More Efficient Aircraft Necessary

The fact that the quotation to which I have just referred would not seem to have been peculiarly relevant to the decision in the case in which it appeared would tend to make the

(Continued on page 48)

One of America's fastest-growing local service carriers is Piedmont Airlines, which boarded 20,355 passengers during August, 1951, with a load factor of 57.09 per cent for its DC-3's. Mail ton-miles for the month totalled 6,000.
—(Piedmont Airlines Photo.)

There are several decided advantages

be no doubt that helicopters will con-

pendency on connecting traffic. Here,

Phenomenal increases in passenger traffic are being achieved by local service airlines. Using DC-3's like the one shown above, Southern Airways flew 10,006 passengers during August, 1951, as compared with 3,348 passengers for August, 1950. There are 31 cities on Southern's system. —(Southern Airways Photo.)

Why We Need a New Short-Haul Transport

By T. H. DAVIS
President, Piedmont Airlines

LOCAL air service improvement and growth require the development of a new air transport designed especially for short-haul operations and incorporating many of the remarkable technological improvements in methods and materials which have become available since the workhorse of the airlines, the DC-3, was perfected.

Recent studies indicate beyond any reasonable doubt that a modern short-haul aircraft, having an operating cost substantially lower than the DC-3, can be produced. The results of operations of the 17 local service airlines indicate that the specifications of such an aircraft should be substantially the same as shown in the accompanying chart. These general specifications have been approved and adopted by the local service airlines and by the CAA Prototype Aircraft Advisory Committee.

Preliminary cost estimates indicate that such an aircraft can be produced to operate at as much as 10 cents per mile less than average DC-3 costs. On the basis of the total revenue miles flown by all local service carriers in 1950, this would mean an annual saving of approximately $3,500,000.

It is of primary importance that this new aircraft be able to break even at a load factor of not more than 50 per cent. In addition, it must have a direct operating cost not exceeding 35c per plane mile. These two requirements are, of course, inter-related, and to meet these requirements the capacity could not be expected to be much greater or less than 24 passengers. Quite fortunately, this capacity appears to be ideal for a local service operation. A primary factor in determining the success of a short-haul operation lies in the frequency of service. Using an aircraft of this capacity should not over-saturate space availability over the majority of the local service route segments, as would be the case using 40-passenger equipment. Furthermore, an aircraft of less than 24-passenger capacity would not provide ample earning capacity to take care of the fixed costs of flight crews and other costs not variable with the size of the aircraft.

In view of the fact that the indirect costs of some local service carriers is 40c per plane mile or less, it is reasonable to expect a total cost of something in the vicinity of 75c per mile by the implementation of this modern local service airliner.

On this basis, it is already evident that several of the local service airlines would be approaching the point where they could operate profitably without any mail pay.

Entirely aside from the current inability of the manufacturers to actively pursue any project of developing such an aircraft because of military commitments, they are also handicapped to a considerable degree by a very limited selection of power plants adaptable to an aircraft of this size. There are now only two reciprocating engines currently in production which appear to be adaptable to an efficient local service airplane. One of these, the Wright Cyclone 7 (800 hp.) is too small, and the other—the Wright 1820-C9HE (1450 hp.)—is perhaps too large for maximum efficiency.

In view of this condition, it could well be practical to use turbine engines driving propellers. Prop-jets are now being used in several experimental operations, particularly in England.

There are several decided advantages of this type power plant over conventional piston engines. They are almost completely free of vibration, which, of course, reduces structural fatigue failures and at the same time considerably improves passenger comfort. In spite of the higher fuel consumption of this type engine, the cost of kerosene and jet fuels is considerably less than the cost of aviation gasoline. The weight/power ratio is outstanding. It is my understanding that the Mamba turbo propeller engine develops more than two horsepower per pound of engine weight. In contrast the Wright 1820-C9HE engine develops one horsepower per pound of weight.

In view of the relatively slight difference between idle, cruise, and take-off rpm. of these engines, there is an inherent safety advantage in effecting "go-arounds" after a refused landing, as well as at other times.

Still another solution to the power plant problem might lie in the use of a combination piston engine-turbine (pure jet) engine configuration. There has been rapid development of jet engines in the lower power range, particularly in Europe. French companies have made encouraging progress in this connection and have only recently licensed Continental Motors Corporation to produce their engines in this country. In such an arrangement as mentioned above, it may be advantageous to equip the aircraft with both power plants, using the small, lightweight jet engines in combination with small piston engines.

It had been suggested by some that perhaps the best aircraft to use as a replacement of the DC-3 would be a large transport helicopter. There can be no doubt that helicopters will continue to play an increasingly important part in air transportation. Rapid strides have been made in reliability and in reducing the almost prohibitive costs. Even so, the long range estimates of the helicopter manufacturers indicate a minimum foreseeable cost of 39c per ton mile, or approximately $1.56 per plane mile for a helicopter having a capacity comparable to the DC-3. In contrast, many of the local service airlines are today experiencing costs of only 80c per plane mile using DC-3 aircraft.

Furthermore, the inherent advantages of the helicopter can not be utilized by most of the local service airlines. A substantial portion of local service business is inter-line, or connecting business to or from the trunk lines. One of the primary purposes of these carriers is to "feed" traffic to the long-haul airlines. For that reason it is, of course, necessary to land at the airport to effect these connections at many points along a given route. Clearly, it is impractical to conduct a helicopter operation over a lineal route where it would be necessary to make landings at both the airport *and* in addition, downtown at several or all of the points along the route.

Because of the relatively high per-passenger-mile fare charged by taxis and airport limousines, helicopters will find their first economic passenger service usefulness in operating between the airport and convenient locations in large metropolitan areas. Also, where there are two large metropolitan centers relatively close to each other the helicopter should soon be a practical vehicle because of the adequacy of strictly point-to-point traffic to insure high load factors, without the dependency on connecting traffic. Here, too, the fare could be higher than regular airline fare because of the elimination of taxi fares at both terminals and because of the decided time saving. Very few existing local service airlines, however, have such a route pattern.

Undoubtedly, the helicopter manufacturers will continue advancement of the art to the extent that the relatively high operating cost of this type aircraft will be reduced considerably. However, it must be remembered that while they are making progress along this line, similar progress will be made in the art of producing conventional aircraft.

It appears that there will exist a substantial and an immediate market for a local service transport aircraft meeting the specifications outlined.

In addition to the substantial demand on the part of the local service airlines, it is apparent that many of the trunk lines are now required to provide short haul service, and if they continue to operate this service they, too, will desperately need a new aircraft designed for that purpose. I submit there exists a considerable need for such an aircraft by the military services, as navigational or bombardier trainers and personnel transports. Furthermore, the owners of the large fleet of executive transports will soon desire to replace their obsolete equipment. The foreign market should also be rather large. Actually, there appears to be perhaps a larger potential continuing market for this type aircraft than for any other type of transport aircraft.

The production of such an aircraft in this country will assure us of con-

(Continued on page 34)

Bonanza Air Lines, which serves the area between Phoenix, Arizona, and Reno, Nevada, recently tabulated increased student travel because of participation in a design contest for new hostess uniforms. Two universities and ten high schools were represented by entries, and resultant publicity established Bonanza as a contributing factor to community progress along its route. A Bonanza DC-3 is shown below. —(Bonanza Air Lines Photo.)

Planning for Local Service Helicopter Operations

By RICHARD K. WALDO*

IN late 1950, the Post Office Department asked the President's Air Coordinating Committee to make a detailed study of rotary-wing aircraft, and to make recommendations on future Federal policy regarding commercial transport helicopter development. The study was to include an objective look at the state of the helicopter art, and an evaluation of the economic prospects for large transport helicopters. A CAA-Navy-Air Force working group spent several months on this study, working closely with interested government and industry groups. Its final report, "Federal Policy Regarding the Development of Commercial Transport Helicopters," was approved by the Air Coordinating Committee on July 19, 1951, and now represents official government policy on the subject.

The ACC report called in general terms for a continued Federal policy of support and encouragement of helicopter development and utilization. To carry out this policy, it contained 17 specific recommendations for action by the five Federal agencies most concerned: Post Office, CAB, CAA, Defense and NACA.

One of the report's chief conclusions was that the transport helicopter, capable of operating into small downtown or close-in heliports, held considerable promise of providing the basis for substantial airline penetration of the short-haul travel market. In this connection, it was suggested that the CAB further study the probable impact of the multi-engine transport helicopter, in connection with its future route pattern planning and route certification proceedings.

Is the transport helicopter the key to the short-haul market, and accordingly "just what the doctor ordered" for the local service operator? Is it in fact the next logical step in short-haul air transport, one capable of opening up a substantially broader passenger market than can be tapped by the conventional airplane? And if the helicopter is so promising, why had it received relatively little attention in local service circles until this year, as a possible solution to the equipment problem?

*Chief Economist, Program Planning Staff, CAA and Chairman, Helicopter Working Group of the Air Coordinating Committee. The views expressed are the personal views of the author, and do not necessarily represent those of the CAA or of the Air Coordinating Committee.

Wiggins Airways at Boston has proposed complete change-over to vertical-lift flight equipment. Sikorsky S-55 helicopter represents type in mind for experimental period. Pictured is Air Force H-19 version of S-55. Commercial passenger capacity is 8, maximum passenger-mail-cargo load is 2,000 lbs. S-55 is powered with 600-hp. Pratt & Whitney engine, has 86-mph. cruising speed. Empty weight is 4,267 lbs., overload-gross is 7,300 lbs.; normal gross is 6,800 lbs. Range is 495 miles with 15-min. reserve. Small picture shows side and rear seats. Three others are behind camera.
— (Sikorsky Photos.)

Transport 'Copters in 3-5 Years

Although some local service operators had undoubtedly seen the helicopter's possibilities for some time in the distant future, they probably discounted it as a vehicle they could count on within, let us say, the next five years.

Taking current military development programs into account, it appears reasonable to estimate that the first type of multi-engine helicopter of DC-3 size will be available for commercial operations in from 3 to 5 years. Availability of such craft will clearly be dependent upon military requirements. However, for working purposes, it seems reasonable to figure upon a period of 3 to 5 years, rather than one of, let us say, 8 to 10 years.

It is believed that the large multi-engine transport helicopter will ultimately be capable of making moderate inroads into the mass short-haul travel market, as well as creating new short-haul business. In addition to its effectiveness in mail and passenger service on metropolitan area radial-type routes, it should ultimately also be

effective on linear-type inter-city

FIGURE 1

Now – it's BRANIFF via Houston or MIAMI to SOUTH AMERICA

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For short-haul journeys, ground

FIGURE II: LARGE TRANSPORT HELICOPTERS

effective on linear-type inter-city routes of the local service and trunk airlines, particularly those routes with relatively short distances between stops.

The country's inter-city passenger travel is largely short-haul in character. About 88 per cent of inter-city bus passengers travel less than 100 miles per trip. About 98 per cent of passenger automobile trips extending outside of city limits are less than 100 miles in length. The average length of haul in rail coaches is 94 miles (excluding commutation traffic, which is of course very short-haul in character).

A very large part of this short-haul passenger travel consists of trips of less than 100 miles to and from metropolitan areas and other large cities from the suburban, satellite and other communities for which the large cities serve as trade centers.

On air trips of less than 100 miles, ground transport time generally equals or exceeds time spent in the air. The result is an over-all downtown-to-downtown speed far less impressive than on medium or long-haul air journeys. On the other hand, the helicopter will be capable of operating into mid-town or close-in heliports, with little or no ground transport time and expense involved.

Midtown-to-Midtown Speed Advantages

To illustrate the advantage which can be enjoyed by the transport helicopter, a comparison has been made of downton-to-downtown over-all speed by an airplane cruising at 170 mph. versus helicopters cruising at 85 and 100 mph., for distances ranging from 25 to 300 miles. The helicopter cruising at 100 mph. was included as a conservative indicator of future transport helicopters, and in order to illustrate how the effective radius of operation increases with higher speeds.

This analysis indicates that the present 85-mph. transport helicopter has a downtown-to-downtown speed advantage over the 170-mph. airplane for distances up to 150 miles. (See Figure I and Table I.) It also indicates that the 100-mph. helicopter has a downtown-to-downtown speed advantage over the 170 mph. airplane for ranges up to 220 miles. These speed advantages are greater at the lower distances, as can be seen at the bottom of Table I. Higher cruising speeds, which will generally be accompanied by higher payloads and lower direct operating costs, can be expected to further extend the helicopter's radius of effective operation.

This analysis indicates that in this short-haul travel market the helicopter, by operating into downtown or close-in heliports, would tend to be more competitive than the airplane with automobile, train and bus transportation. It might therefore be expected to operate at somewhat higher average load factors than the airplane, which might well counterbalance its higher direct operating costs, which will be discussed shortly.

The analysis also indicates that the helicopter will offer an attractive downtown-to-downtown speed as compared with various means of surface transportation.

HELICOPTER OVER-ALL TIME AS PER CENT OF AIRPLANE TIME

Distance (miles)	At 85 mph.	At 100 mph.
25	42	38
50	57	51
75	71	62
100	83	72
150	99	86
200	112	97
300	130	111

FIGURE 1

Comparison of downtown-to-downtown over-all speed versus distance by airplane cruising at 170 mph. and helicopters at 85 and 100 mph.

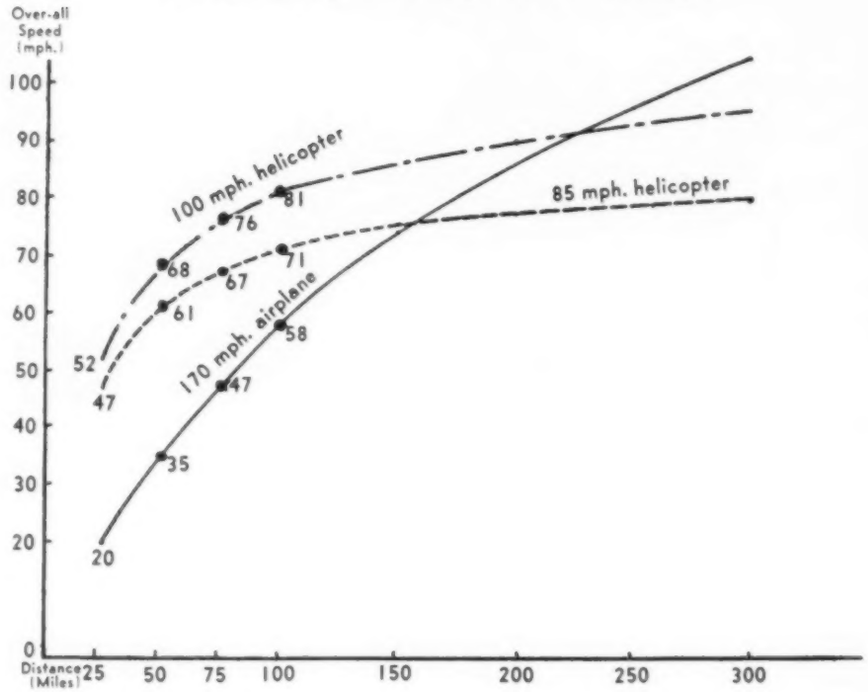


TABLE I

Comparison of downtown-to-downtown over-all speed and elapsed time versus distance by airplane cruising at 170 mph. and helicopters cruising at 85 and 100 mph.

Distance (miles)	Flight time (min.)	Allowance for take-off, climb, letdown and landing (min.)	Ground time to and from airport or heliport (min.)	Total time (min.)	Downtown-to downtown average over-all speed (mph)
AIRPLANE AT 170 MPH.					
25	9	8	60	77	19.5
50	18	8	60	86	34.9
75	27	8	60	95	47.4
100	35	8	60	103	58.3
150	53	8	60	121	74.4
200	71	8	60	139	86.3
300	106	8	60	174	103.4
HELICOPTER AT 85 MPH.					
25	18	4	10	32	46.9
50	35	4	10	49	61.2
75	53	4	10	67	67.2
100	71	4	10	85	70.6
150	106	4	10	120	75.0
200	141	4	10	155	77.4
300	212	4	10	226	79.6
HELICOPTER AT 100 MPH.					
25	15	4	10	29	51.7
50	30	4	10	44	68.2
75	45	4	10	59	76.3
100	60	4	10	74	81.1
150	90	4	10	104	86.5
200	120	4	10	134	89.6
300	180	4	10	194	92.8

For short-haul journeys, ground transportation expense at both ends of the trip represents a sizeable proportion of the airline fare. The ground transport fare when added to the airline fare raises the over-all fare per mile from the basic 6c level to 7c, 8c, or 9c per mile, depending upon the location. By operating downtown-to-downtown, the helicopter could absorb this ground transport fare and charge a slightly higher airline fare per mile without increasing out-of-pocket cost to the passenger.

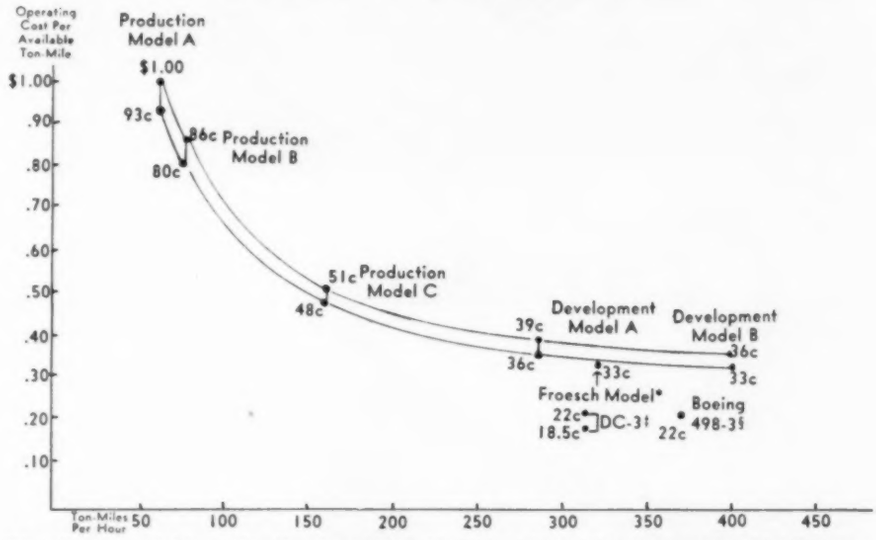
The fact must be faced that mid-town or close-in heliports are essential to this whole line of reasoning. It has apparently been the working assumption of the helicopter industry that close-in sites would be available. This, however, will depend upon public acceptance of the transport helicopter, so that restrictive existing regulations will be relaxed and restrictive new regulations not be imposed. Lack of public acceptance, whether for noise, nuisance, safety or other reasons, could deny to the transport helicopter the close-in landing areas it requires if it is to achieve its highly promising potential as a transportation vehicle. Each of these factors can apparently be taken care of, given the proper planning and attention.

The fact that the helicopter requires a relatively small and inexpensive landing area, could result in the inauguration of passenger and mail service to many of the more than 100 communities now certificated but unserviced because of inadequate airport facilities. This fact can also facilitate further extension of air services to additional small communities, as required by the public convenience and necessity. Current thinking appears to be that heliport landing areas accommodating transports of up to 30,000 lbs. gross weight will be perhaps 250 to 300 feet square, depending upon the

(Continued on page 37)

FIGURE II: LARGE TRANSPORT HELICOPTERS

Estimated direct operating cost per available ton-mile versus work capacity in ton-miles per hour. (65-mi. block distance and 2,750-hr. annual utilization. Width of curve represents variation between conservative and liberal estimates on airframe maintenance cost.)



*Hypothetical model from "Looking Ahead With Air Transport," by Charles Froesch, Chief Engineer, Eastern Air Lines, in Aeronautical Engineering Review, May, 1950.
‡Value of $.22 is on basis of ATA formula, at block distance and utilization noted above. Value of $.185 is actual cost experience of local service carriers in 1950.
§Model is projected 24-30 place short-haul airplane.

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LOCAL SERVICE AIRLINE

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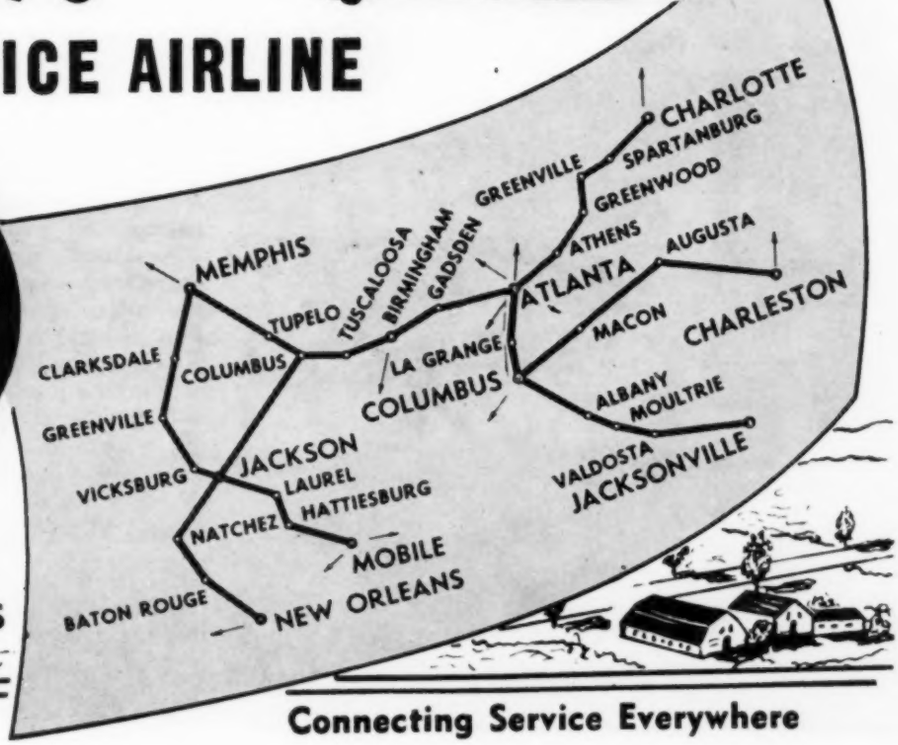

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Conversion to All DC-3 Equipment

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First Airline Service to Borger, Texas and Norman, Oklahoma

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FT. WORTH, TEXAS

RECORD OF ACHIEVEMENT

(Continued from page 20)

mail revenue. The operators, even with obsolete airplanes, have managed to reach a point of matching mail revenue with non-mail revenue. Controversial legislation with money attached to it simply won't pass. What the carriers must work towards is a program the entire industry will buy—and get solidly behind. That includes a more virile interest by the military service.

All one has to do to realize that the local air service pattern of the nation is far from complete is to take note of the large "white" areas on the national air service map where no service exists. For any given area in the nation service must be provided to all the towns that need it. If only a few people in a town have telephones, the service is of little use to the subscriber. The only way to get a profitable telephone service is for it to be available to everyone in town. The same theory holds true in local air service. The quickest way to get any carrier on a self-supporting basis is to give it a completed route pattern so people can go most any place in the area at the time of day they want to travel. When that condition exists, as in the telephone business, you don't have to worry about patronage.

In the matter of airports and aids to navigation specifically for this type of short-haul service there are many problems yet to be solved. Leaders are fairly well agreed that the airport should be a two-way, single-runway proposition. The smaller communities cannot justify big airports and even should they build them needlessly it means the eventual soaking of the carriers with higher use charges. It's cheaper to adopt the cross-wind landing gear. Also, the nearness of the airport to the town is far more important to local service operations than to the long-haul trunks. The airports have to be close in and this again means single runways.

The completion factor for local service carriers is excellent but they still have to overfly intermediate stops where aids are not available. This necessary practice in bad weather permits terminal-to-terminal schedule completion but the passenger carried beyond his stop will go by automobile next time. Without adequate landing aids and reliability in times of low minimums for the smaller towns, there is no service at all. On-time performance is far more important to the short haul people than to the long-haul trunks because when distances are short it's easy to go some other way.

The answer to this dilemma has not been found. Perhaps it lies in the so-called "baby" VOR, which at the present time is too expensive. Local service operations need a reliable, cheap, straight-in-approach instrument landing system and not enough official interest or work is now evident.

Fortunately for the carriers, more and more smaller towns are learning that their most fruitful possibilities for adequate air service rest with local service operators rather than with the trunks. But these facts of life are still too little recognized. The old chamber of commerce psychology of being on the long haul, whether they have any long-haul traffic or not, must go. Until the people in the smaller towns come to realize that local systems provide a more usable service for their needs and that better long-haul service is actually provided by connecting at the nearby centers with the trunk carriers with more frequent schedules and far larger numbers of destinations, it will be impossible to complete a sensible local service route pattern for the nation. The trunk carriers realize this and some of them are more than willing to transfer smaller towns to the local service operators. But many towns don't want to be transferred and the process is slowed to a snail's pace.

While all of these many complex problems beset this

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of regular service

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TRANS-TEXAS Airways

relatively new form of air transportation, plus the ordinary problems imposed by temporary certificates that sometimes discourage risk capital, growing manpower difficulties, labor rates equivalent to those in established trunk operations and unproven route structures, none is incapable of solution. A progressive Civil Aeronautics Board, which we have, an interested Civil Aeronautics Administration, which we also have, and the healthy, vigorous approach the local service carriers make to every stumbling block in their way, will combine to keep the amazing growth record along the same path toward economic self-sufficiency and permanent certification. ★ ★ ★

WHY WE NEED A NEW TRANSPORT

(Continued from page 27)

tinued leadership in air transportation. I am confident our manufacturers will continue *their* leadership in making available to the industry a new local service airplane.

Specifications for Local Service Airplane

Here are the suggested specifications for a suitable local service air transport:

PAYLOAD: 5,250 pounds minimum at range specified below. (See item "b" below).

RANGE: 350 statute miles with above payload (including 5 intermediate stops), and then 200 miles, plus 45 minutes reserve at 60 per cent max. continuous power. Increased tankage for 175 miles shall be provided so that additional range can be obtained with a reduced payload. Consideration shall be given to providing for the maximum military ferry range fuel capacity, by inclusion of the required piping, connections, etc.

SPEED: The highest cruising speed possible consistent with economy of operation is desired. It is emphasized that

(Continued on page 46)

CENTER *to* CENTER

Wiggins Airways is the First Local Service Airline to Propose a Complete Changeover to Transport Helicopters on its City-to-City Passenger Route.

Wiggins Airways

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THIS R37S-1

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IS THE *ONE* SPARK PLUG APPROVED FOR *ALL* THE RADIAL ENGINES LISTED BELOW* SINCE THEY COMPRISE THE SEVEN BASIC ENGINES USED BY ALL DOMESTIC AND FOREIGN AIRLINES AND THE USAF.
THE R37S-1 HAS THESE UNIQUE AND OUTSTANDING ADVANTAGES:

1. STANDARDIZATION ON ONE TYPE.
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R 1830	R 2600	R 3350
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DEPENDABILITY • PERFORMANCE • LONG LIFE

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HELICOPTER PLANNING

day). Figure II was the resulting comparison of direct costs as between

Harbor pilots shuttle by air between eleven port cities served by West Coast Airlines, guiding ocean liners safely to harbor from the sea. Here two oldsters of the sea lanes compare notes with WCA Captain Joe Jobe. In June, WCA carried 10,251 passengers for a load factor of 61.69. Previous record month was August, 1948, with 9,045 passengers and a passenger load factor of 50.59. With three months left to go, the local service airline was already 20,000 passengers over the total number carried for the entire year of 1947, its first full year of operation. It is now doubling efforts to sell air freight, reporting that the largest classification of air freight has been emergency shipments for fishing and lumbering operations in which time loss from breakdown can cost huge sums.
—(West Coast Airlines Photo.)

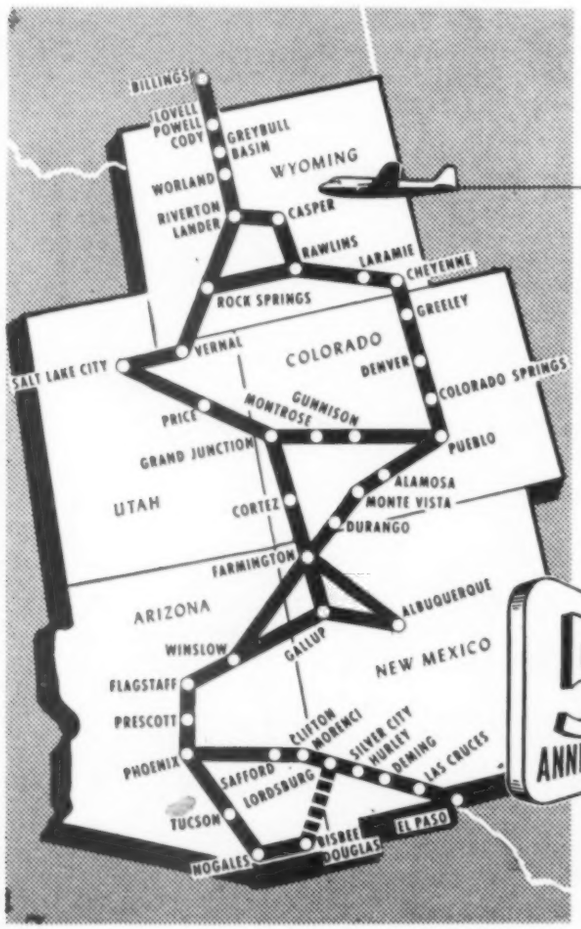
AN APPRAISAL

(Continued from page 23)

alignment of local service operations so that the carriers can do a better job for the public and for themselves.

The Board is aware of the efforts which have been made by local service carriers to develop a type of aircraft which will be more suitable for local service use than the DC-3. The Board stands ready to do what it can in fostering and promoting the development of such an aircraft.

The operating achievements and record of our local air service carriers have steadily improved with each year of their existence. The Board has accumulated a great deal of the operating information with respect to local air service which was totally lacking only five years ago. The Board is hopeful that the local service carriers will rise to the demands for more economy and greater commercial revenues with a corresponding reduction of subsidy requirements to the end that the experiment which was launched by the Board will remain, in major part, a successful and necessary part of the air transportation system of this country. ★ ★ ★



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FRONTIER is proud of its unblemished 5-year safety record, flying over the nation's most hazardous terrain. Today FRONTIER serves 50 cities of the Rocky Mountain Empire with America's finest DC-3 equipment...and connects with *all* transcontinental airlines.

FRONTIER AIRLINES
SERVING THE ROCKY MOUNTAIN EMPIRE

HELICOPTER PLANNING

(Continued from page 31)

proximity of buildings and other obstructions.

Operating Costs Analyzed

What about the direct operating costs of these transport helicopters? Commercial versions of helicopters in military production or development hold varying degrees of economic promise. Their direct operating cost per ton-mile will decrease with increasing size and work capacity from about $1 to as low as 33c to 36c, according to the estimates contained in the ACC report. The cost curve will tend to flatten out, at the present state of the art, at the 20 to 30 passenger size. Further developments in larger ships may be expected to result in decreasing ton-mile costs with increasing size.

To evaluate the direct operating costs of these helicopters at the longer block distances and higher utilization which might be involved if they were used in local service operations, estimates were made in ACC's report on the basis of a 65-mile block distance between stops and an annual utilization of 2,750 hours (7.5 hours per day). Figure II was the resulting curve. It should be noted that such a degree of utilization will probably take some time to achieve.

In connection with this curve, there is included the estimated direct operating cost of a hypothetical helicopter which Charles Froesch, Chief Engineer of Eastern Airlines, has said he believes can be built, in the light of present knowledge. For comparative purposes, there are also included the direct operating costs of two short-haul fixed-wing aircraft, the DC-3 and the Boeing 498-3. The operating cost of these two airplanes, on the basis of the ATA formula and at the block distance and utilization used throughout this curve, is 22c per available ton-mile as against the 33c value for the most economical transport helicopter shown here. This helicopter thus has a direct operating cost at least 50 per cent higher than that of comparable fixed-wing airplanes. If we assume, as seems reasonable, that the ground and indirect costs of operating a helicopter would roughly equal that of operating a fixed-wing airplane, the over-all cost disadvantage of the helicopter would be reduced to 25 per cent.

Two important qualifications must be noted at this point. First, a flat comparison of direct costs as between the helicopter and the airplane is somewhat misleading and inadequate. Second, the estimated direct operating costs for the helicopter appear subject to substantial reductions with advances in the art.

What does the foregoing add up to in terms of local service airline planning? First is the obvious and general conclusion that transport helicopters will bear close watching and should be taken into consideration in long-range planning. While operators will not be able to buy rotary-wing DC-3's in the near future, the indicated 3 to 5-year waiting period does not seem unreasonably long in terms of aeronautical development (if active development work were to begin today on a fixed-wing DC-3 replacement, a similar waiting period would probably be encountered).

Local service operators, who have been thinking that the solution to their equipment problem lies in a ship with lower direct operating costs than the DC-3, would do well not to be unduly alarmed by the relatively high operating costs indicated for the transport helicopters. Aside from the normal cost reductions anticipated, there are

(Continued on page 40)

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FINER–FASTER FLIGHTS
Chicago and Central and
Northland Cities... Illinois–
Wisconsin–Upper Michigan–Minnesota

Convenient connections with 15 major airlines

WISCONSIN CENTRAL AIRLINES

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Statistical Analysis of Local Service Airline

	All American	Bonanza	Central	Empire	Frontier	Lake Central	Mid Continent 106	Mid-West	Oza
OPERATING REVENUES									
Passenger	$ 500,289	$ 101,473	$ 57,640	$ 110,285	$ 364,005	$ 75,723	$ 133,523	$ 5,138	$ 1
U. S. Mail	734,521	171,046	265,399	150,602	620,800	138,057	70,962	19,269	42
Other	26,216	5,857	31,345	20,346	47,885	296,978	9,467	35	
Total	$ 1,261,026	$ 278,376	$ 354,384	$ 281,233	$ 1,032,690	$ 510,758	$ 213,952	$ 1,04,442	$ 5
OPERATING EXPENSES									
Flying Operations	$ 272,950	$ 65,259	$ 90,048	$ 98,091	$ 338,562	$ 216,089	$ 65,526	$ 34,134	$ 1
Maintenance Flight Equipment	95,936	36,918	75,808	30,400	104,203	81,341	17,632	7,761	4
Depreciation Flight Equipment	76,656	10,615	35,020	11,431	39,794	11,661	2,922	10,235	6
Total Direct Expenses	$ 445,542	$ 112,792	$ 200,876	$ 139,923	$ 482,558	$ 309,091	$ 86,081	$ 42,180	$ 2
Ground Operations	$ 157,276	$ 39,514	$ 87,189	$ 45,180	$ 208,370	$ 70,441	$ 55,474	$ 31,809	$
Maintenance-Ground & Indirect	58,123	25,950	22,008	13,559	73,530	11,186	12,291	4,322	3
Passenger Service	35,819	11,054	13,308	11,968	50,754	21,085	15,401	234	2
Traffic and Sales	115,389	17,233	36,342	21,227	88,666	24,389	28,251	2,000	5
Advertising, Publicity	29,782	7,680	12,889	6,416	28,718	11,965	15,482	198	
General and Administrative	74,160	34,005	45,127	16,580	82,880	42,061	21,413	11,999	5
Depreciation - Ground	12,153	10,872	7,821	3,548	10,646	924	3,061	1,838	
Total Indirect Expense	$ 485,701	$ 146,307	$ 224,685	$ 118,477	$ 543,564	$ 182,051	$ 151,373	$ 52,400	$ 24
Total Expenses	$ 931,243	$ 259,099	$ 425,561	$ 258,400	$ 1,026,122	$ 491,142	$ 237,453	$ 94,580	$ 53
CENTS PER REVENUE MILE FLOWN									
Operating Revenues									
Passenger	59.52	43.32	16.26	33.72	32.27	11.67	54.23	2.56	
U. S. Mail	87.37	73.02	74.88	46.04	55.04	21.29	28.82	49.46	
Other	3.12	2.50	8.84	6.22	4.24	45.80	3.85	.22	
Total Revenue	150.01	118.84	99.98	85.98	91.55	78.76	86.90	52.24	1
Operating Expenses									
Flying Operations	32.47	27.86	25.40	29.99	30.01	33.32	26.61	12.05	
Maintenance Flight Equipment	11.41	15.76	21.39	9.29	9.24	12.54	7.16	3.87	
Depreciation Flight Equipment	9.12	4.53	9.88	3.50	3.53	1.80	1.19	5.10	
Total Direct Expense	53.00	48.15	56.67	42.78	42.78	47.66	34.96	21.02	
Ground Operations	18.71	16.86	24.60	13.81	18.47	10.86	22.53	15.85	
Maintenance-Ground & Indirect	6.92	11.08	6.21	4.15	6.52	1.72	4.99	2.15	
Passenger Service	4.26	4.72	3.75	3.66	4.50	3.25	6.26	.12	
Advertising, Publicity	3.54	3.28	3.64	1.96	2.55	1.85	6.29	.10	
Traffic and Sales	14.06	7.36	10.25	6.49	7.86	3.76	11.47	1.00	
General and Administrative	8.82	14.52	12.73	5.07	7.35	6.49	8.70	5.98	
Depreciation - Ground	1.45	4.64	2.21	1.08	.94	.14	1.24	.91	
Total Indirect Expense	57.76	62.46	63.39	36.22	48.19	28.07	61.48	26.11	
Total Expense	110.78	110.61	120.06	79.00	90.97	75.73	98.44	47.13	
CENTS PER REVENUE TON-MILE									
Non-Mail Revenue	61.76	56.85	81.79	50.81	47.72	41.93	56.75	47.00	
Mail Revenue	86.16	90.61	243.94	58.57	71.92	15.53	25.16	901.35	29
Total Revenue	147.92	147.46	325.73	109.38	119.64	57.46	84.91	948.35	29
Direct Flight Expense	52.26	59.75	184.63	54.42	55.91	34.78	34.16	383.45	13
Indirect Expense	59.97	77.50	206.52	46.08	62.97	20.48	60.06	476.12	11
Total Expense	109.23	137.25	391.15	100.50	118.88	55.26	94.24	859.35	25
PASSENGERS CARRIED									
Per Employee	129	59	29	122	50	87	331 *	15	
Per Airplane	5,263	1,913	906	2,791	2,241	2,015	3,755	117	1
TON-MILES CARRIED									
Per Employee	1,899	1,452	439	2,255	1,607	4,805	7,411 *	280	
Per Airplane	77,502	47,195	13,599	51,423	71,930	111,106	83,990	1,634	29
PASSENGER-MILES FLOWN									
Per Employee	18,243	15,154	4,194	23,298	13,367	44,930	69,118 *	2,692	
Per Airplane	744,636	492,500	130,000	531,200	598,167	1,039,000	783,333	17,500	255
Average Passenger Trip Length - Miles	141	257	143	190	267	516	209	149	
Average Passenger Fare Paid	$ 8.78	$ 13.49	$ 7.99	$ 8.32	$ 13.95	$ 8.86	$ 11.89	$ 7.31	$
Average Revenue Per Passenger Mile-Cents	6.19	5.27	5.72	4.65	5.16	5.57	5.72	4.59	
Average Passengers/Day/Station	18.71	10.54	3.32	9.59		NA	17.68	.31	
Passengers/1,000 Population Served	3.9	41.9	4.3	32.7	19.2	3.0	2.5	.4	
Unduplicated Route Miles Served	2,071	639	1,231	954	3,203	888	554	1,210	2
Points Served	34	8	24	16	40	NA	7	25	
Exclusive Local Service Points	18	5	13	9	24	5	2	12	
Number & Type Aircraft Used	11 DC-3	4 DC-3	5 DC-3 3 A-35	5 DC-3	12 DC-3	4 DC-3 2 A-35 2 C-46	3 DC-3	6 C-46	7
Months in Operation (to 6/30/51)	28	18	22	57	55	20	9	20	
Total Number Employees (6/30/51)	449	130	248	114	537	185	34 *	39	
Average 1-way Trips/Route Miles Daily	4.45	4.02	3.16	3.76	3.86	8.02	4.87	1.53	
Scheduled Landings Daily	171	28	76	62	165	NA	30	47	
Average Number Employees per Station	13.2	16.3	10.3	7.1	13.4	NA	4.9	1.6	
Revenue Miles Flown	840,600	234,242	354,449	327,102	1,127,994	648,492	246,205	200,692	53
Revenue Hours Flown	6,336:47	1,635:51	2,612:32	2,209:06	8,008:36	4,287:21	1,629:33	1,623:28	3,90
Scheduled Miles Completed	98.88%	98.66%	99.01%	99.77%	98.08%	92.75%	99.33%	89.09%	97
Revenue Passenger Miles (000)	8,191	1,970	1,040	2,656	7,178	8,312	2,350	105	
Revenue Passenger Load Factor	46.40%	40.05%	16.18%	38.67%	30.30%	56.89%	45.45%	13.08%	15
Average Passenger Load	9.74	8.41	2.93	8.12	6.36	12.82	9.54	.52	
REVENUE TON-MILES FLOWN									
Passenger	798,564	180,302	100,244	244,255	717,794	865,079	223,335	8,415	15
U. S. Mail	14,374	1,738	5,370	6,239	33,170	3,233	5,825	2,537	
Express	36,961	777	1,068	5,521	22,018	19,929	11,778	-	
Freight	-	4,602	445	-	87,448	-	9,866	54	
Excess Baggage	2,621	1,363	1,670	1,102	2,735	604	1,165	-	
Total	852,520	188,782	108,797	257,117	863,165	888,845	251,969	11,006	
Total Available Utilized	42.26%	33.58%	14.87%	32.75%	31.88%	45.91%	42.64%	12.46%	
Revenue Passengers Carried	57,898	7,651	7,250	13,956	26,888	16,118	11,265	703	
Tons Revenue Express and Freight	274	28	-	25	354	NA	126	27	
Daily Aircraft Utilization	6:17	4:32	4:20	4:48	7:41	3:47	6:42	2:52	
Average Flying Speed	133	143	136	148	141	151	151	12	
Revenue Ton Miles Per Revenue Mile	1.01	.81	.31	.79	.77	1.37	1.02	.05	

*Only employes with all duties on Route A. M. 106. Lake Central includes military charter. Central during this quarter was changing from A-35 to DC-3 equipment.

rline Operations for Second Quarter, 1951

	Ozark	Piedmont	Pioneer	Robinson	Southern	Southwest	Trans-Texas	West Coast	Wiggins	Wisconsin Central	Total or Average
	$ 115,755	$ 684,830	$ 556,582	$ 250,957	$ 232,408	$ 392,232	$ 210,906	$ 201,297	$ 6,997	$ 236,109	$ 4,236,149
	424,031	210,929	268,064	145,178	379,901	184,885	409,664	141,624	67,033	219,968	4,701,933
	9,923	34,931	59,181	18,278	14,419	34,313	14,431	22,347	2,140	15,774	663,866
	$ 549,709	$ 930,690	$ 883,827	$ 414,413	$ 626,728	$ 611,430	$ 635,001	$ 365,268	$ 76,170	$ 471,851	$ 9,601,948
	$ 170,800	$ 279,368	$ 255,141	$ 117,828	$ 221,526	$ 186,763	$ 191,466	$ 97,129	$ 20,819	$ 148,545	$ 2,860,097
	47,464	132,889	100,214	51,701	97,356	50,159	89,828	30,247	9,404	66,889	1,126,150
	62,943	13,340	22,354	24,848	42,458	17,380	12,514	5,595	2,366	27,326	429,458
	$ 281,207	$ 425,598	$ 377,709	$ 194,378	$ 361,340	$ 254,301	$ 293,809	$ 132,971	$ 32,589	$ 242,760	$ 4,415,705
	$ 83,479	$ 82,852	$ 134,005	$ 62,809	$ 89,690	$ 108,146	$ 95,416	$ 59,724	$ 27,931	$ 101,256	$ 1,540,564
	31,636	50,542	53,975	35,045	42,221	44,165	65,345	12,342	3,318	34,150	593,708
	22,723	43,366	54,930	17,677	32,060	27,764	32,952	14,344	208	21,076	426,723
	50,666	120,334	114,186	32,181	66,559	78,635	80,606	34,425	2,705	46,782	963,574
	5,012	35,559	31,214	6,856	14,841	17,615	24,147	11,421	263	27,727	287,785
	52,611	62,563	67,913	38,778	49,029	56,134	46,187	32,795	11,796	51,997	798,028
	3,395	5,801	9,202	3,721	12,347	6,329	7,094	5,209	617	8,118	112,696
	$ 249,522	$ 401,017	$ 465,423	$ 197,067	$ 306,756	$ 338,787	$ 351,746	$ 170,259	$ 46,838	$ 291,105	$ 4,723,078
	$ 530,729	$ 826,614	$ 843,132	$ 391,445	$ 668,096	$ 593,088	$ 645,556	$ 303,230	$ 79,427	$ 533,865	$ 9,138,783
	21.75	64.78	55.19	64.14	29.45	60.01	28.37	52.34	4.88	46.17	41.55
	79.68	19.95	26.58	37.11	48.13	28.29	55.10	36.82	46.75	43.02	46.12
	1.67	3.30	5.86	4.67	1.82	5.24	1.94	5.81	1.49	3.09	6.52
	103.30	88.03	87.63	105.92	79.40	93.54	85.41	94.97	53.12	92.28	94.19
	32.10	26.42	25.29	30.12	28.07	28.57	25.76	25.25	14.52	29.05	28.05
	8.92	12.57	9.94	13.21	12.33	7.67	12.08	7.86	6.56	13.08	11.05
	11.83	1.26	2.22	6.35	5.38	2.66	1.68	1.46	1.65	5.35	4.21
	52.85	40.25	37.45	49.68	45.78	38.90	39.52	34.57	22.73	47.48	43.31
	15.69	7.84	13.29	16.05	11.36	16.54	12.83	15.53	19.48	19.80	15.11
	5.94	4.78	5.35	8.96	5.35	6.76	8.79	3.21	2.31	6.68	5.82
	4.27	4.10	5.45	4.52	4.06	4.25	4.43	3.73	.14	4.12	4.19
	.94	3.36	3.10	1.75	1.88	2.69	3.25	2.97	.18	5.42	2.82
	9.52	11.38	11.32	8.23	8.43	12.03	10.84	8.95	1.89	9.15	9.45
	3.39	5.92	6.73	9.91	6.21	8.59	6.21	8.53	8.23	10.17	7.83
	.64	.55	.91	.95	1.57	.97	.96	1.35	.43	1.59	1.11
	46.09	37.93	46.15	50.37	38.56	51.83	47.31	44.27	32.66	56.93	46.33
	99.74	78.18	83.60	100.05	84.64	90.73	86.83	78.84	55.39	104.41	89.64
	60.35	60.33	52.04	67.34	52.88	52.94	44.01	61.40	79.58	56.00	54.34
	203.61	17.67	22.66	36.31	81.39	22.95	80.00	38.88	583.86	48.90	52.15
	263.96	78.00	74.70	103.65	134.27	75.89	124.01	100.28	663.44	104.90	106.49
	135.03	35.67	31.92	48.62	77.41	31.57	57.38	36.51	283.85	53.97	48.97
	119.82	33.61	39.34	49.29	65.72	42.05	68.69	46.74	407.96	64.72	52.38
	254.85	69.28	71.26	97.91	143.13	73.62	126.07	83.25	691.81	118.69	101.35
	50	119	94	137	62	127	54	152	43	100	85
	1,740	5,606	3,830	5,340	2,713	4,076	2,176	4,094	248	3,752	3,030
	857	2,814	2,641	2,050	1,176	2,788	1,418	2,248	396	1,710	1,880
	29,750	132,569	107,565	79,963	51,865	89,515	56,394	60,707	2,296	64,256	67,288
	8,389	27,615	24,580	21,287	11,103	25,644	13,025	23,772	3,966	16,346	17,827
	288,429	1,301,000	1,001,091	830,200	489,775	823,444	522,444	641,833	23,000	614,143	637,903
	166	232	261	155	181	202	240	157	93	163	211
		$ 13.62	$ 13.41	$ 9.80	$ 9.54	$ 10.88	$ 10.89	$ 8.53	$ 5.63	$ 9.00	$ 10.81
		5.90	5.25	6.27	5.39	5.53	4.68	5.52	6.08	5.49	5.54
	NA	24.10	22.05	32.60	8.66	15.51	8.28	17.99	.85	13.75	NA
	1.9	21.3	20.3	2.7	8.0	10.0	7.9	22.4	.6	4.6	9.4
	2,178	1,853	1,872	776	2,094	1,246	2,176	727	700	1,504	25,689
	NA	23	21	9	31	26	26	15	16	21	NA
	12	4	9	2	13	17	15	7	8	15	189
	7 DC-3	9 DC-3	11 DC-3	5 DC-3	9 DC-3	9 DC-3	9 DC-3	6 DC-3	5 C-78	1 L-10A 6 DC-3	134
	9	40	71	33	25	55	45	55	21	40	-
	243	424	448	195	397	289	361	162	29	263	4,795
	2.65	6.26	5.91	5.53	4.13	5.75	3.74	5.81	2.24	3.72	4.35
	NA	131	123	55	131	142	104	74	48	87	NA
	NA	18.4	21.3	21.7	12.8	11.1	13.9	10.8	1.8	12.5	-
	532,129	1,057,254	1,008,573	391,251	789,302	653,650	743,468	384,632	143,383	511,311	10,194,729
	3,980:12	6,884:08	6,713:16	2,802:00	5,261:22	5,108:59	5,062:15	2,733:00	1,315:09	3,523:32	71,727:07
	97.46%	99.83%	99.82%	97.34%	99.41%	98.01%	99.77%	99.62%	78.71%	97.07%	98.06%
	2,019	11,709	11,012	4,151	4,408	7,411	4,702	3,851	115	4,299	85,479
	18.07%	52.75%	51.99%	50.52%	26.59%	53.99%	30.12%	47.68%	19.62%	42.30%	41.16%
	3.79	11.07	10.92	10.61	5.58	11.34	6.32	10.01	.80	8.41	8.38
	183,272	1,112,360	1,101,117	366,028	418,787	741,201	475,116	344,466	10,210	401,591	8,292,136
	5,869	16,133	26,333	6,749	22,779	15,989	13,587	4,199	412	14,348	198,884
	1,012	23,012	11,405	16,541	22,676	13,249	6,960	3,318	859	31,908	245,992
	-	34,372	39,746	9,597	-	32,941	14,913	11,302	-	-	245,232
	100	7,241	4,612	898	2,541	2,255	1,470	956	-	1,943	34,330
	200,453	1,193,118	1,183,213	399,813	466,783	805,635	512,046	364,241	11,481	449,790	9,016,574
	1.31%	47.02%	48.88%	42.58%	24.64%	51.35%	28.70%	39.46%	17.76%	39.05%	37.60%
	12,178	50,451	42,131	26,699	24,419	36,685	19,582	24,562	1,242	26,267	405,975
	114	226	170	191	113	246	81	81	13	245	2,287
	6:15	8:24	7:04	6:10	6:52	6:03	6:07	4:48	2:53	6:07	5:56
	134	154	150	140	150	128	147	141	109	145	142
	19	1.13	1.17	1.02	.59	1.23	.69	.95	.08	.88	.88

—From CAB reports, compiled by Ray & Ray, consultants.

Average Flying Speed	133	143	136	148	141	151	151
Revenue Ton Miles Per Revenue Mile	1.01	.81	.31	.79	.77	1.37	1.02

*Only employes with all duties on Route A. M. 106. Lake Central includes military charter. Central during this quarter was changing from A-35 to DC-3 equip

133,178 PASSENGERS Have Flown PIEDMONT This Year!

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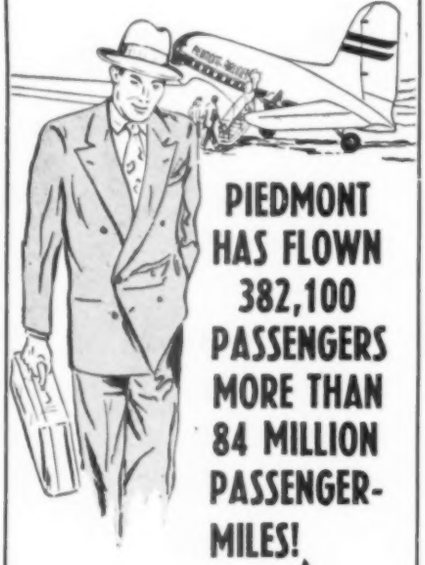

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PIEDMONT Airlines

SMITH REYNOLDS AIRPORT
Winston-Salem, N. C.

HELICOPTER PLANNING

(Continued from page 37)

two other factors which point toward lower operating costs. The first is the fact that the development check on the transport helicopter will be largely picked up by the military. The second is the obvious possibility of surplus military helicopters becoming available to the local service operators at some future date.

Operators Should Plan Now

The question of how soon an individual local service operator should begin his long-range planning on this subject clearly involves a judgment factor. Several operators are already engaged in such planning, and a few have filed new route applications with CAB involving the operation of large helicopters.

Here are several suggestions for steps that might be taken by a local service operator who wants to start his planning now. He can begin to study the possible application of helicopters to his particular route system. Specifically, he can set up sample helicopter schedules on his routes, and compare downtown-to-downtown times by helicopter as against fixed-wing airplane plus surface transportation. Considerable basic data are contained in the ACC Helicopter report, and manufacturers such as Bell, McDonnell, Piasecki and Sikorsky will probably be glad to cooperate by supplying cost and performance data on individual commercial machines. Incidentally, these manufacturers may also be in a position to give limited assistance to local service operators in analyzing the application of helicopters to their route systems.

The operator can consider whether only a portion of his particular system would lend itself to helicopter operations, and if so whether the problems proposed by a mixed rotary and fixed-wing operation would rule out such an approach.

The operator with a relatively long distance between stops and long linear routes might consider whether one of the so-called "compound helicopter" or "convertiplane" designs (which hold promise of cruising speeds above 200 mph. while retaining a zero landing and take-off speed) is not the solution to this particular problem. These convertible aircraft will not enter the commercial airline picture until several years after conventional trans-

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19	1.13	1.17	1.02	.59	1.23	.69	.95	.08	.88	.88

—From CAB reports, compiled by Ray & Ray, consultants.

port helicopters of DC-3 capacity.

The operator who is anxious to get going early on helicopter operations might carefully weigh the advantages of a head start, in terms of operational and traffic experience, as against its disadvantages, in terms of high operating costs and inadequate payload capacity of helicopters available within the next year or so.

The operator might consider how his route structure could be altered to take fullest advantage of the fact that the helicopter is at its best in very short-haul operations. In this regard, a possible trend from linear inter-city routes to radial wheel-and-spoke routes in large metropolitan areas is seen in applications filed with CAB this summer by two local service operators. Other possible types of route alterations could be studied.

The problem of how to serve the numerous joint stops on present local service routes is one that requires attention. Another difficult one to solve will be whether to serve both the airport and a downtown heliport at cities where connections are made with other airlines. If multiple stops are made, interline business can be retained, but only at the cost of double overhead. One local service traffic manager who has considered this problem feels that, if downtown-to-downtown traffic by helicopter is as heavy along his routes as he thinks it will be, he would probably be willing to give up his interline business and concentrate on his on-line traffic, serving downtown heliports only.

A further step that could be taken would be to begin lining up downtown or close-in heliport sites and doing the necessary promotional work with municipal authorities to assure the availability of the sites.

Several local service operators are already thinking 3 to 5 years ahead, and making plans along these lines. Those who have not yet begun to do so might well ponder the recent comment of a government aviation official, with broad experience in local service airline problems. "The only thing the helicopter has in its favor in the short-haul airline market," he observed, "is sheer logic." ★ ★ ★

Local Service Airlines
Number and Type of Aircraft Used in Scheduled Service

July, 1951

	DC-3	Beech Bonanza	Cessna 190	Cessna T-50	Total
All American	11				11
Bonanza	4				4
Central	5				5
Empire	5				5
Frontier	12				12
Lake Central	4	2			6
Mid-Continent 106	3				3
Mid-West			6		6
Ozark	7				7
Piedmont	9				9
Pioneer	12				12
Robinson	5				5
Southern	10				10
Southwest	9				9
Trans-Texas	9				9
West Coast	6				6
Wiggins				5	5
Wisconsin Central	6				6
Total	117	2	6	5	130

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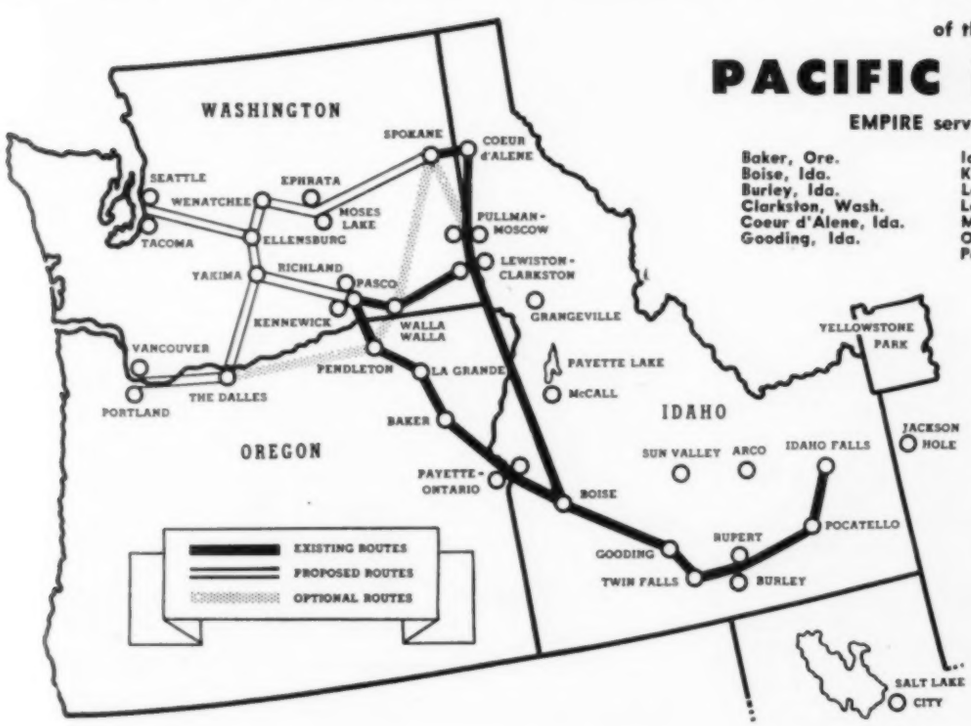
La Grande, Ore.
Lewiston, Ida.
Moscow, Ida.
Ontario, Ore.
Pasco, Wash.
Pendleton, Ore.
Pocatello, Ida.
Pullman, Wash.
Richland, Wash.
Spokane, Wash.
Twin Falls, Ida.
Walla Walla, Wash.



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Directory of Local Service Air Carriers

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Symbol of an increasing local service airline contribution to the defense effort is this scene showing military personnel boarding a Central Airlines transport. Military group traffic movements in July and August of 1951 included 11,750 personnel flown on 372 charter flights by local service carriers. The Air Transport Association's Military Bureau, now two years old, coordinates the charter flights from headquarters in the Pentagon, headed by Frank J. Macklin. It also has representatives at many major military installations. Military group travel aboard local service airline charter planes moves personnel direct from point to point, simplifying transportation, lodging and feeding problems. It saves time to accomplish far greater utilization of military personnel.
—(Central Airlines Photo.)

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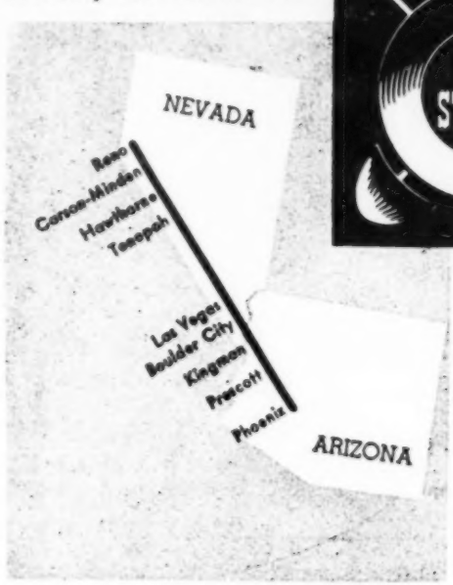

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chasing; Jack R. Kemp, director of public relations.

ROBINSON AIRLINES, Ithaca,

vice president — administration and secretary; R. E. Harding, Jr., vice president — operations; Marshal Gibbons, treasurer.

LOCAL SERVICE AIRLINES
Comparison of Total Operating Expenses (Cents Per Revenue Mile)

Airline	Second Quarter 1950	Quarter 1951
All American	100.38	110.78
Bonanza	82.58	110.61
Central*	35.95	120.06
Empire	83.20	79.00
Frontier	90.61	90.97
Lake Central	61.84	75.73
Mid-Continent 106	..	96.44
Mid-West	39.37	47.13
Ozark	..	99.74
Piedmont	75.73	78.18
Pioneer	81.20	83.60
Robinson	94.05	100.05
Southern	91.05	84.64
Southwest	80.30	90.73
Trans-Texas	75.07	86.83
West Coast	91.89	78.84
Wiggins	62.29	55.39
Wisconsin Central*	81.66	104.41
Total	78.92	89.64

*Equipment Change.

LOCAL SERVICE AIRLINES
Comparison of Number of Employes As of June 30, 1950 and 1951

Airline	1950	1951	% Increase
All American	427	449	5.15
Bonanza	98	130	32.65
Central	77	248	222.08
Empire	117	114	(2.56)
Frontier	554	537	(3.07)
Lake Central	68	185	172.06
Mid-Cont. 106	..	34	..
Mid-West	62	39	(37.10)
Ozark	..	243	..
Piedmont	363	424	16.80
Pioneer	391	448	14.58
Robinson	145	195	34.48
Southern	220	397	80.45
Southwest	289	289	0
Trans-Texas	337	361	7.12
West Coast	167	162	(2.99)
Wiggins	23	29	26.09
Wisc. Central	219	263	20.09
Total	3,557	4,547	27.83

W. Robert England, director of sales and traffic; Ernest E. McCrory, superintendent of maintenance; Owen Cook, chief pilot; Richard A. Stickney, superintendent of communications; William R. Nail, superintendent of stations; Shelton (Stub) Bonnewell, director of public relations.

EMPIRE AIR LINES, INC., P. O. Box 268, Boise, Idaho. Joe Lux, president; Gwin Hicks, vice president-general manager; Fred Orr, vice president; Arvid Nelson, secretary-treasurer.

George T. Cooke, general manager and superintendent of operations; George J. Solomon, chief pilot; R. H. Bendio, superintendent of maintenance; Thomas R. Croson, general sales manager; William R. Birch, superintendent of stations; Lem Allen, Jr., superintendent of communications.

FRONTIER AIRLINES, Stapleton Airfield, Denver, Colorado. H. S. Darr, president; D. A. Duff, vice president—traffic and sales; C. A. Myhre, executive vice president and treasurer; R. M. Wilson, vice president—operations.

J. B. Montgomery, manager of flight service; Jack Burnell, director of engineering and maintenance; O. A. Byrne, general traffic manager and sales manager; John D. Lindsay, passenger sales manager; G. S. Kitchen, manager of public relations.

LAKE CENTRAL AIRLINES, Weir Cook Airport, Indianapolis, Indiana. Col. Roscoe Turner, president; John V. Weesner, executive vice president and general manager; Robert W. Clifford, vice president—operations; Lloyd W. Hartman, treasurer; Donald S. Getchell, assistant to general manager and traffic and sales manager; William W. Weesner, secretary.

Walter A. Irwin, superintendent of maintenance; Jack D. Andersen, superintendent of stations; C. Hilderbrand, superintendent of communications.

MID-WEST AIRLINES, Municipal Airport, Omaha, Nebraska. F. C. Anderson, president; Dr. Bernard C. Barnes, vice president; Ray Nyemaster, secretary-treasurer.

M. W. Taylor, superintendent of operations and chief pilot; Robert Porter, superintendent of maintenance.

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C. L. Tabor, general traffic manager; Henry L. Sweezy, traffic manager; Richard C. Disney, superintendent of flight operations; James O'Neil Reid, director of personnel and passenger service; Frank Doyle, director of advertising and public relations; Philip Newell, superintendent of communications; Elwyn Boock, superin-

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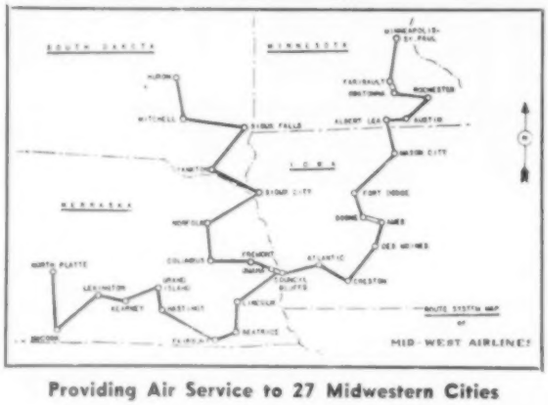

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L. W. Golson, general traffic manager; R. E. Turbiville, superintendent of stations; H. K. Saunders, director of operations; L. A. Watson, superintendent of communications; H. W. Cartwright, superintendent of maintenance; W. W. Barber, purchasing agent.

PIONEER AIR LINES, INC., P. O. Box 7065, Love Field, Dallas, Texas. Major W. F. Long, chairman; General Robert J. Smith, president; Harold B. Seifert, vice president—operations; Harding L. Lawrence, vice president—traffic; E. W. Bailey, secretary-treasurer.

G. K. Harris, operations manager; M. M. Jacoby, chief pilot; Tom E. Nance, superintendent of stations; Marvin L. Davis, general traffic and sales manager; R. L. Sicard, superintendent of maintenance; W. D. Price, Jr., superintendent of communications; Tom Lombardo, chief engineer; C. E. Moffat, superintendent of purchasing; Jack R. Kemp, director of public relations.

ROBINSON AIRLINES, Ithaca, New York. E. Victor Underwood, president; Bertram J. Miner, chairman; Robert E. Peach, executive vice president and general manager; John R. Carver, vice president and secretary; W. D. Bosworth, treasurer.

Carl A. Benscoter, operations manager; George R. Dickinson, superintendent of maintenance.

SOUTHERN AIRWAYS, INC., Municipal Airport, Birmingham, Alabama. Frank W. Hulse, president; Ike F. Jones, vice president; Hugh W. Davis, vice president — operations; Norman Arnold, general sales manager; George F. Estey, secretary-treasurer.

Robert W. Hunt, traffic and sales manager; R. C. Suttles, Jr., purchasing agent; Thomas R. Foster, superintendent of maintenance; Earl A. Bostelmann, superintendent of stations and communications; George L. Bradford, chief pilot.

SOUTHWEST AIRWAYS, San

(Continued on page 63)

LOCAL SERVICE AIRLINES
Comparison of Total Revenue Ton-Miles Flown
Second Quarters 1950 and 1951

Airline	Second Quarter 1950	Second Quarter 1951	% Increase
All Amer.	620,877	852,520	37.31
Bonanza	110,452	188,782	70.92
Central	36,063	108,797	201.69
Empire	221,363	257,117	16.15
Frontier	488,087	863,165	76.85
Lake Central*	100,928	888,845	780.67
Mid-Cont. 106	...	251,966	...
Mid-West	27,951	11,006	(60.62)
Ozark	...	208,253	...
Piedmont	714,708	1,193,118	66.94
Pioneer	954,881	1,183,213	23.91
Robinson	222,559	399,813	79.61
Southern	165,239	466,783	182.49
Southwest	644,897	805,635	24.92
Trans-Texas	388,623	512,046	31.76
West Coast	262,232	364,241	38.90
Wiggins	5,746	11,481	99.81
Wisc. Central	214,278	449,790	109.91
Total	5,178,924	10,016,574	93.41

*Military Charter included.

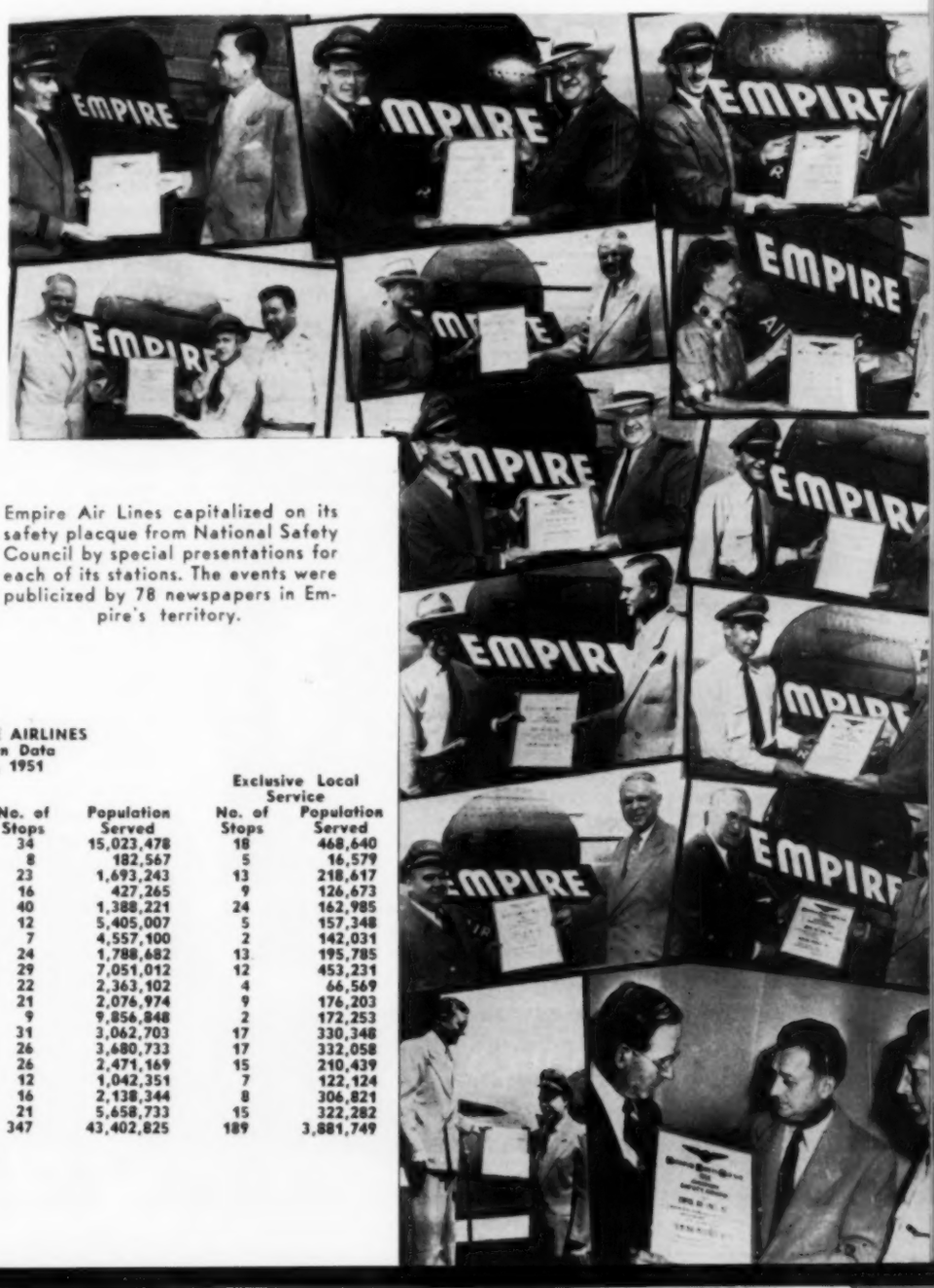
LOCAL SERVICE AIRLINES
Comparison of Average Passenger Loads
Second Quarters 1950 and 1951

Airline	Second Quarter 1950	Second Quarter 1951	% Increase
All American	7.24	9.74	34.53
Bonanza	5.10	8.41	64.90
Central	0.70	2.93	318.57
Empire	7.93	8.12	2.40
Frontier	5.01	6.36	26.95
Lake Central*	3.91	12.82	227.88
Mid-Cont. 106	...	9.54	...
Mid-West	0.72	0.52	27.78
Ozark	...	3.79	...
Piedmont	7.06	11.07	56.80
Pioneer	9.48	10.92	15.19
Robinson	8.08	10.61	31.31
Southern	3.42	5.58	63.16
Southwest	9.67	11.34	17.27
Trans-Texas	4.72	6.32	33.90
West Coast	8.24	10.01	21.48
Wiggins	0.70	0.80	14.29
Wisc. Central	3.92	8.41	114.54
Total	5.95	8.38	40.84

*Military Charter included.

LOCAL SERVICE AIRLINES
Comparison of Total Non-Mail Revenue
(Cents Per Revenue Mile)
Second Quarters 1950 and 1951

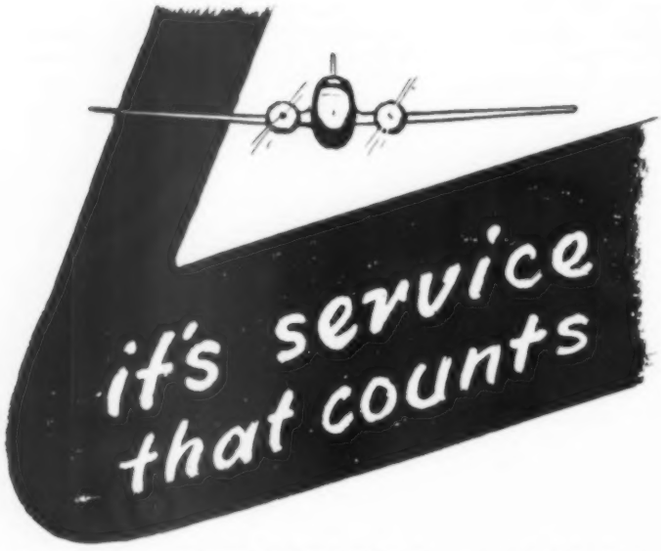
Airline	Second Quarter 1950	Second Quarter 1951	% Increase
All American	45.30	62.64	38.28
Bonanza	30.65	45.82	49.49
Central	4.16	25.10	503.37
Empire	34.80	39.94	14.77
Frontier	27.72	36.51	31.71
Lake Central	20.43	57.47	181.30
Mid-Cont. 106	...	58.08	...
Mid-West	3.35	2.58	(22.99)
Ozark	...	23.62	...
Piedmont	44.59	68.08	52.68
Pioneer	52.58	61.05	16.11
Robinson	57.64	68.81	19.38
Southern	20.32	31.27	53.89
Southwest	54.23	65.25	20.32
Trans-Texas	22.76	30.31	33.17
West Coast	49.61	58.15	17.21
Wiggins	4.69	6.37	35.82
Wisc. Central	22.42	49.26	119.71
Total	34.28	48.06	40.20



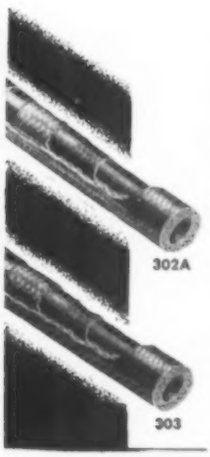
Empire Air Lines capitalized on its safety placque from National Safety Council by special presentations for each of its stations. The events were publicized by 78 newspapers in Empire's territory.

LOCAL SERVICE AIRLINES
Route Pattern Data
September, 1951

	Unduplicated Route Miles	No. of Stops	Population Served	Exclusive Local Service No. of Stops	Exclusive Local Service Population Served
All American	2,071	34	15,023,478	18	468,640
Bonanza	639	8	182,567	5	16,579
Central	1,231	23	1,693,243	13	218,617
Empire	954	16	427,265	9	126,673
Frontier	3,203	40	1,388,221	24	162,985
Lake Central	888	12	5,405,007	5	157,348
Mid-Continent 106	554	7	4,557,100	2	142,031
Mid-West	1,210	24	1,788,682	13	195,785
Ozark	2,178	29	7,051,012	12	453,231
Piedmont	1,853	22	2,363,102	4	66,569
Pioneer	1,872	21	2,076,974	9	176,203
Robinson	776	9	9,856,848	2	172,253
Southern	2,094	31	3,062,703	17	330,348
Southwest	1,246	26	3,680,733	17	332,058
Trans-Texas	2,176	26	2,471,169	15	210,439
West Coast	727	12	1,042,351	7	122,124
Wiggins	700	16	2,138,344	8	306,821
Wisconsin Central	1,504	21	5,658,733	15	322,282
Total (Unduplicated)	25,689	347	43,402,825	189	3,881,749



The LOCAL SERVICE AIRLINES have established a commendable record of public service since their authorization by the Civil Aeronautics Board six years ago.



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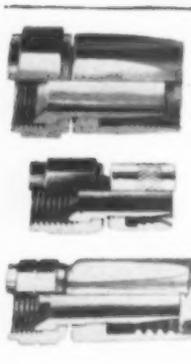
Aeroquip Type 302A is a medium high-pressure hose especially suited for fluid suction lines.

Aeroquip Type 303 hose can be used for minimum volumetric expansion or for an operating pressure higher than 1,500 psi.

Aeroquip Type 306 hose is for use in low pressure air or vacuum instrument systems.



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AIRCRAFT SALES Company

MEACHAM FIELD FORT WORTH 6, TEXAS

WHY WE NEED A NEW TRANSPORT

(Continued from page 34)

small improvements in block speeds are of utmost importance in feederline operation and any such improvements as may be obtained from higher cruising speed should be given serious consideration.

FIELD SIZE: 3,300 feet maximum, sea level, standard conditions based on hard surface runway. Aircraft should be capable of operating in and out of fields with a 30 mph. cross wind. Feederline operations demand short runways to reduce ground time to a minimum.

OTHER REQUIREMENTS: (a) The airplane shall comply with the Transport Category Requirements of CAR 4b.

(b) Payload shall allow 24 passengers at 150 pounds each, with carry-on storage of passenger baggage of 600 pounds or 25 pounds per passenger. In addition, space shall be provided for 1,500 pounds of cargo accessible to the cabin. This would total 5,940 pounds, which means that a portion of the 1,500 pounds cargo may not necessarily be carried with full passenger load.

(c) The cargo compartment loading and unloading shall be accomplished from ground level without the aid of lifts or ladders. They shall be arranged so that the direct loading and unloading can be accomplished at waist high height or less from outside the airplane.

(d) Above outlined cargo requirements shall be based on 8 pounds per cubic foot density. For passengers, four abreast seating arrangement is desirable for simplified weight and balance. The arrangement for carry-on storage of passenger baggage should represent smooth-flow operation. A floor design loading of 100 pounds per square foot is desired for passenger compartments and 150 pounds per square foot for cargo compartments. Provisions should be made for the ready installation of 200 pounds flooring throughout for military use.

(e) Cargo compartment should be immediately adjacent to the passenger cabin so that flight attendants can conveniently supervise the loading of both sections of the airplane. The cargo door opening shall be at floor level. An over-all height of about 48 inches and width of 36 inches should be provided. A door rim 6 feet high and 7 feet wide shall be provided in the airplane's basic structure, to meet military requirements. For civil use, this rim may be "skinned over" down to the desired door size.

(f) Pressurization is considered of importance in feederline operation if it can be obtained without undue economic penalty. Consideration should be given to pressurization resulting in sea level pressure at 5,000 feet to enable climb and descent at maximum rates and thus increase block speeds.

(g) Thermal anti-icing or other improved method of surface anti-icing required.

(h) Either conventional piston engines or turbines may be used, but if piston engines are used provision for the installation of turbines shall be made.

(i) Cargo compartments should be heated, but no provision for humidity control need be provided. Build-in heating, ventilation and refrigerated cooling is extremely important on a feederline airplane, since the stops are of such short duration as to prohibit the use of ground equipment for this purpose. This equipment should be readily removable.

(j) Servicing arrangements should be such that minimum personnel will be required. Refueling should require only one man, and all maintenance should require minimum work. All components should be easily accessible and parts and accessories should be simple and interchangeable so that minimum maintenance and replacement costs can be realized.

ESTIMATED DIRECT OPERATING COST (100% load): Lowest possible cost per plane-mile is of primary importance. Cost should be based on an average distance between landings of 65 miles. Direct operating cost per plane-mile and per ton-mile shall be less than that of the DC-3 with both airplanes computed on the ATA method basis with a 7-year depreciation period for the new airplane and a 4-year period for the DC-3. ★ ★ ★

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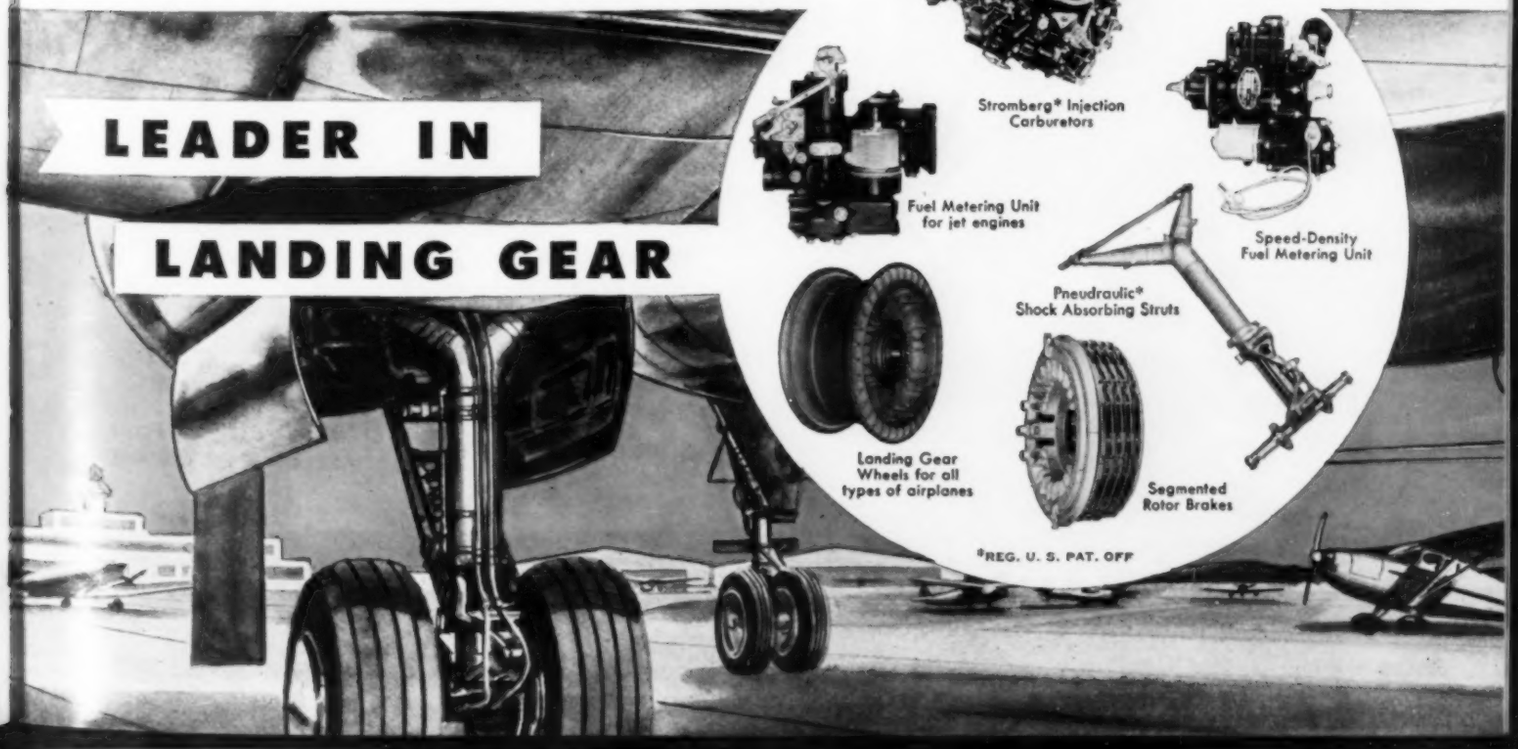
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LOOKING TO THE FUTURE

(Continued from page 25)

Board's discussion of the commercial self-sufficiency problem the more pointed.

Ways in which the local service carriers can move in the direction of improving their expense-non-mail revenue ratio are obvious to my readers. This is a long-range problem constantly challenging the technical and administrative skill of management. Whether an improvement in that area can be brought about through the development of an airplane better adapted to the needs of the local service operators (and as to that there is still only agreement as to the desirability of such an airplane and little agreement as to what sort of airplane it should be) or whether through an improvement in load factors through greater utilization of equipment, or whether through any one of a number of other techniques calculated to reduce costs or increase non-mail revenues, all are possibilities to which constant and painstaking attention must of necessity be given.

One should not be misled into being too pessimistic as to the future by virtue of a recognition of the continuing nature and extent of the problems still unsolved, nor should one be too optimistic as a result of the recent consistent improvement in traffic on most lines, all of which is to the good, but some of which may be attributable to a cold war-created type of prosperity which may tend to over-state the long-range trend.

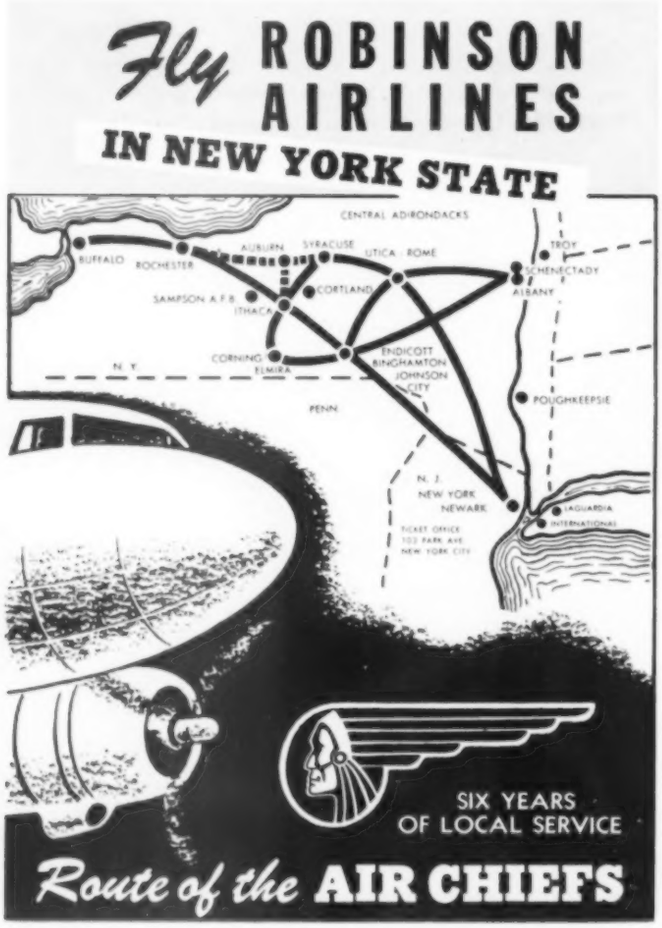
To my mind one of the most intriguing as well as dangerous manifestations in air transportation in recent years has been the emphasis given to the so-called subsidy separation idea. Two years ago when the idea was first seriously advanced it was conceived by its sponsors almost entirely as an accounting technique intended only to provide a bookkeeping method of identifying the total amount of Government mail pay which could not be considered as compensation for carrying the mail. At that time all seemed to agree that the subsidy separation legislation which was then first proposed involved nothing more than that and no one seriously suggested that it involved any fundamental change in the concept of Government support as contained in the Civil Aeronautics Act.

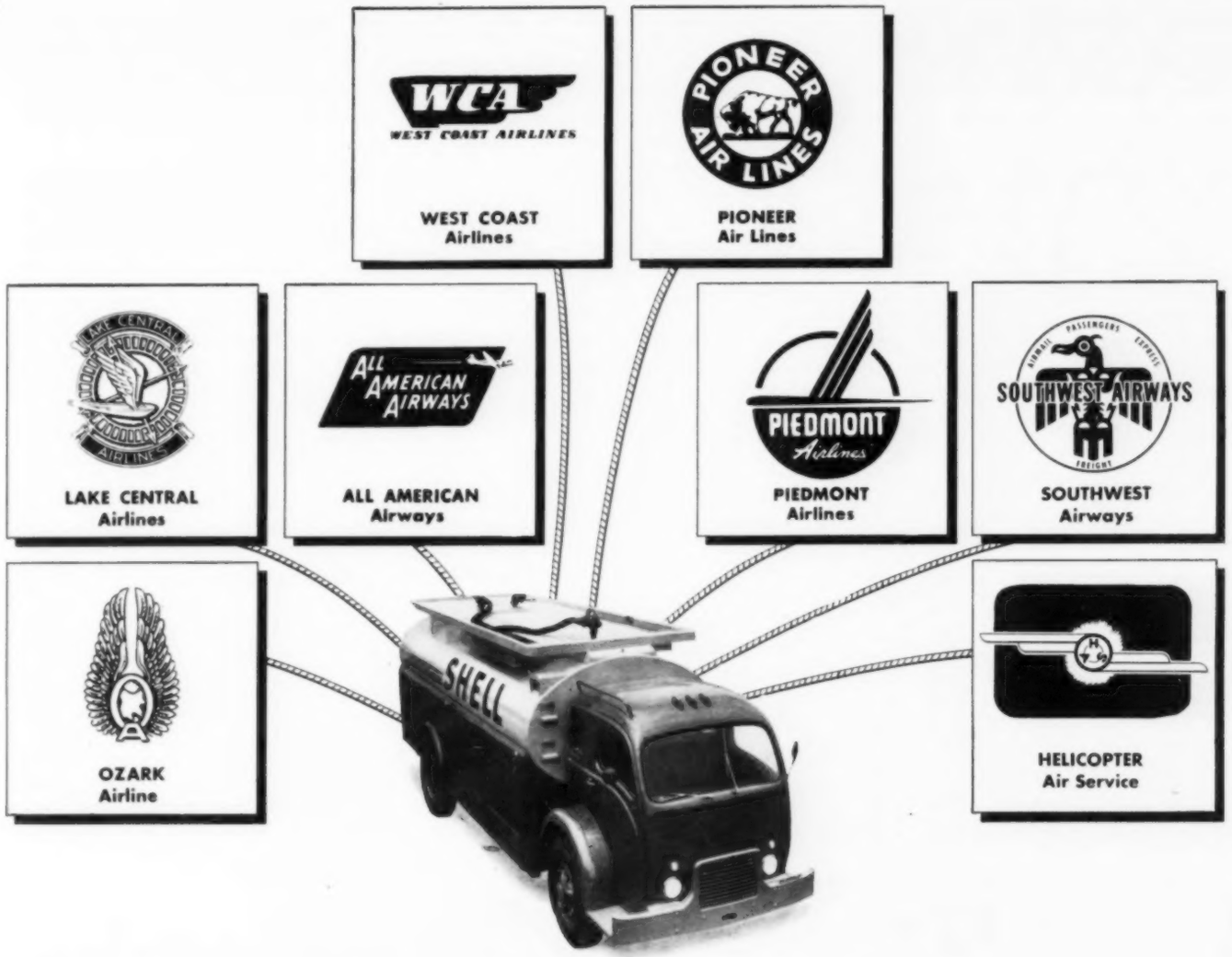
Damaging Results of Subsidy Separation

It seems to the writer that, rightly or wrongly, that view of the situation has been somewhat lost sight of. Many now apparently believe that subsidy separation means much more than that and that its proper and necessary result will be to reduce if not to eliminate the amount of Government support to air transportation.

An illuminating illustration of current thinking on this subject in some quarters can be found in the Congressional Record of September 17 of this year. That date marked the opening of the Senate debate on the so-called "Air Mail Subsidy Separation Act of 1951," sponsored by Senator Johnson of Colorado. At one point the sponsor of the bill said, "It has not been our purpose in drafting this legislation, to eliminate any essential subsidies, but merely to disclose publicly their true extent and character." In spite of this assertion, a careful reading of the Record will indicate that not only the bill's sponsor but many others apparently are imbued with the idea that the adoption of this legislation will almost automatically result in great savings of Federal funds.

It seems to me that this trend of thinking is adverse to the best interests of civil aviation. To begin with, it is clearly self-evident that the mere transfer of subsidy disbursements from Post Office to CAB accounts, estimated





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Shell's growth in the aviation industry and in research has paralleled the growth of air transportation in every respect.

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flies **THE MOST PASSENGERS**
THE MOST AIR FREIGHT
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at some $60,000,000, is a sample of accounting legerdemain which will not reduce the financial burden on the United States Treasury at all. Thus, any ultimate savings to the taxpayer can only be derived from a dollarwise reduction in subsidy appropriations. Anyone with an intimate knowledge of the air transportation industry well realizes that such a course of action at this time can only result in an equivalent curtailment of vital air transportation services. Inasmuch as the local service carriers constitute a segment within the airline industry which, for inherent operational reasons, depends to a large extent on governmental support during its developmental period, they might well bear the brunt of any such curtailment.

LOCAL SERVICE AIRLINES
Comparison of Revenue Hours Flown
Second Quarters

Airline	Second Quarter 1950	Second Quarter 1951	% Increase
All American	6,201:50	6,336:47	2.18
Bonanza	1,589:21	1,635:51	2.93
Central	3,591:21	2,612:32	(27.25)
Empire	2,030:36	2,209:06	8.79
Frontier	5,816:42	4,287:21	164.42
Lake Central	1,621:26	8,008:36	37.68
Mid-Cont. 106	..	1,629:33	..
Mid-West	3,150:50	1,623:28	(48.48)
Ozark	..	3,980:12	..
Piedmont	6,234:14	6,884:08	10.42
Pioneer	6,213:47	6,713:16	8.04
Robinson	2,215:00	2,802:00	26:50
Southern	3,033:30	5,261:22	73.44
Southwest	4,517:15	5,108:59	13.10
Trans-Texas	5,155:57	5,062:15	(1.82)
West Coast	2,570:57	2,733:00	6:30
Wiggins	894:15	1,315:09	47.07
Wisc. Central	3,964:40	3,523:32	(11.13)
Total	58,801:41	71,727:07	21.98

One more point on subsidy: One of the most unfortunate things which could result from the adoption of any subsidy separation legislation would be a general belief that it would afford some rule of thumb by which he who runs and reads may differentiate the so-called "good" carriers from those which are "sub-standard." What I am getting at is that nothing could be more unfortunate than to have the end result of subsidy separation legislation a division of carriers between those which are economically self-sufficient and those which are not, with the implicit understanding that those which are economically self-sufficient are necessarily better members of the air transportation community than the others.

We all know, but the general public may not, that attaining commercial self-sufficiency is not typically an inherent tribute to the management of an airline but rather comes as a result of a good management operating under what I would call a good hunting license.

Stated another way, *the best airline management in the world could not run a thin route on a compensatory mail rate at a profit;* conversely, a less than completely ideal management could operate an ideal route pattern at a profit without the benefit of any substantial amount of Government money.

I would not wish to be thought of as opposing the principle of subsidy separation. All I am endeavoring to do is to point out again some of the things which have been and still are of concern to many who believe on the one hand that separation is desirable and on the other that the technique for doing so should be developed carefully and so as not to do irreparable damage to a sound and still developing air transportation system. ★ ★ ★

LOCAL SERVICE AIRLINES
Comparison of Revenue Express and Freight Ton-Miles Flown
Second Quarters 1950 and 1951

Airline	Second Quarter 1950	Second Quarter 1951	% Increase
All American	29,959	36,961	23.37
Bonanza	3,824	5,379	40.66
Central	0	1,513	..
Empire	4,736	5,521	16.58
Frontier	54,516	109,466	100.80
Lake Central	5,813	19,929	242.84
Mid-Cont. 106	..	21,644	..
Mid-West	0	0	..
Ozark	..	18,012	..
Piedmont	55,107	57,384	4.13
Pioneer	48,099	51,151	6.35
Robinson	16,470	26,138	58.70
Southern	11,958	22,676	89.63
Southwest	50,251	46,190	(8.08)
Trans-Texas	21,518	21,873	1.65
West Coast	6,108	14,620	139.36
Wiggins	0	859	..
Wisc. Central	12,176	31,908	162.06
Total	320,535	491,224	53.25

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home the bacon!

West Coast is proud of its place on the nation's air map, proud of the fact that this year for the fourth consecutive year we will turn over more than a quarter-million dollars in passenger fares to our connecting airlines.

On-time performance, fast, frequent schedules have helped us each month this year set a new record in both passengers and passenger-miles flown for any corresponding month since operations began.

A GOVERNMENT-CERTIFICATED, REGULARLY SCHEDULED AIRLINE

WEST COAST AIRLINES

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"WINGS Over MAIN STREET"
of Rich and Industrious . . .
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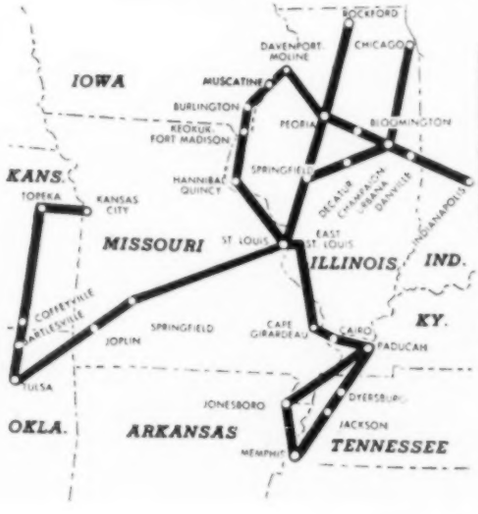

ALL Certificated ROUTES now in OPERATION

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PROGRESS with BEECHCRAFT

39,473 passengers

695,236 lbs. of freight and baggage

140,387 lbs. of mail

1,771,238 miles traveled

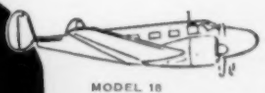
... all by Beechcraft BONANZA

This is the impressive transportation record amassed since August, 1947, by the Beechcraft fleet of Carco Air Service of Albuquerque, N. M., which provides scheduled daily air service for the Atomic Energy Commission's remote Los Alamos Project.

As with Beechcraft Bonanzas operated by hundreds of firms and business men for transportation, each Carco flight has proved economical of manpower, time and expense. Carco has thus contributed materially to the national defense effort with Beechcraft speed, dependability and economy.

With increasing atomic airlift loads and schedules, Carco Air Service has now become the first to press into operation the new Beechcraft Twin-Bonanza, having ordered three. These will make possible for the first time round-the-clock air operations from the mountain air strip at Los Alamos, greatly increasing Carco's airlift capacity for national defense. Even more impressive performance records will be amassed, symbol of progress in Carco operations and Beechcraft leadership in air transportation.

● Range at 60% power, 1,005 miles
Top speed at sea level, 200 mph
Cruising speed at 10,000 ft., 191 mph
Rate of climb, 1,650 fpm
Service ceiling, 20,400 ft.



Beechcraft

BEECHCRAFTS ARE THE AIR FLEET OF AMERICAN BUSINESS

Bonanzas have flown 39,473 passengers and 140,

40,000 Passengers by

By TOM ASHLEY

IN less than four years of operations, a small airline in New Mexico has shuttled some 40,000 passengers, almost 1,000,000 lbs. of

Beechcrafts shuttle between Los Alamos and Albuquerque (left), 65 miles away. New Twin-Bonanza is shown below on take-off from Los Alamos and in flight over mountainous terrain.
—(FLIGHT MAGAZINE Photos.)

nd 140,687 lbs. of mail to and from this mountain strip serving the atomic city of Los Alamos, N. M., pop. 12,000.

s by Bonanza

freight and baggage and some 140,000 lbs. of mail between the atomic-bomb city of Los Alamos and Albuquerque, its nearest main-line transportation terminal. Practically all of the airlift has been moved by small, 4-place airplanes—larger ones have been unable to operate regularly to and from atomic city's small mountain-top air strip and there's no room anywhere near there for a larger strip. Last month two of the first new Beechcraft Twin-Bonanzas were placed in operation on the airlift, adding dependability and safety for night flying.

Such is the distinction of one of civil aviation's most unique operations, Carco Air Service. With 16 pilots chosen for mountain flying skill, 12 mechanics and 13 airplanes, this little enterprise has overcome a succession of obstacles to show steady growth and progress. Carco is unique also in that it carries U. S. mail without Post Office pay, doing this as a courtesy service to the Atomic Energy Commission and the citizens of the remote atomic city. In an era of big-airplane and big-airline philosophy, Carco Air Service shuttles its lightplanes in and out of the remote mountain top like winged jeeps, reducing travel time across desolate terrain to 30 mins. by lightplane and saving 5 hrs. of direct travel time by auto for each of the

First two Twin-Bonanzas available went to Carco Air Service. They have made single-engine take-offs in tests at Los Alamos, elevation 7,100 ft.
—(FLIGHT MAGAZINE Photo.)

Headquarters for Carco Air Service is this hanger on Kirtland Field, Albuquerque. That's Chief Pilot Bill Hartshorne at the transmitter. Two large transports are operated by Carco on lease from USAF. —(FLIGHT MAGAZINE Photo.)

thousands of scientists and others making the round trip by air.

Seven 4-place Beechcraft Bonanzas and one 9-place Beechcraft D-18S have accomplished this on regular daily air schedules. In addition, Carco Air Service operates an extensive non-scheduled airlift for the Atomic Energy Commission, branching out from Albuquerque to all sections of the nation. This operation is flown in three large multi-engine air transports, one owned by Carco and two leased from the U. S. Air Force. It is mainly for air cargo and has flown several million pounds of high-priority freight during the last several years.

But the little Bonanzas are the workhorses of the atomic airlift. Twelve schedules daily are flown, with one to seven planes making each schedule. This frequency is the keystone. It means that the airlift is operated to fit the needs of the Los Alamos community, rather than the passengers having to conform to the needs of the air service.

By diligently following this concept, Carco Air Service has established its planes as a part of the atomic city's daily affairs. Busy scientists, who make up the bulk of its passengers, have come to know from experience that they can depend on a Bonanza arriving or departing with clock-like regularity on their remote hill top. Whether there's a load or not, each of the twelve daily schedules is flown exactly on time. In 46 months there have been only about 240 cancellations—out of some 18,000 scheduled flights. This is a record of completing almost 99 per cent of all schedules.

The result has been a steady growth in traffic. Service was inaugurated on September 1, 1947. At the end of the first year, Carco's Bonanzas had averaged about 20 passengers daily. This has almost tripled, the daily passenger load now being about 50 passengers.

If conventional, modern-day airline philosophy had to be followed, nothing less than a 21-passenger DC-3 could handle the Los Alamos traffic volume. By this same concept, one or two round trips daily would be all such a city of only 12,000 or so population could hope for. But Los Alamos escaped this kind of reasoning from the beginning—it is physically impossible to operate DC-3 and larger airliners from the little mountain-top air strip because of altitude and wind conditions.

Carco Aids Atomic Progress

Through the air service it has supplied to Los Alamos, Carco has contributed materially to America's atomic energy program. This was confirmed to us by C. L. Tyler, Los Alamos operations manager of the Atomic Energy Commission, who emphasized the importance of manpower, time and money savings effected through the use of the air service.

"Los Alamos was located on the mesas of an isolated New Mexico mountain range partially because such isolation was necessary for an atomic weapons research laboratory," he explained. "In the earlier days, such isolation also handicapped the atomic program by imposing major difficulties in the fast transportation of personnel and materials and fast communications by letter.

"When regular air service was opened between Los Alamos and Albuquerque late in 1947, this handicap was overcome for the first time. Each round trip by air saves five hours of the time of key personnel. The cost per passenger is less than for the government surface transportation previously provided, and there are other direct savings such as reduced reimbursement for travel expenses. By connecting in Albuquerque with major airlines, Carco's service greatly speeds personnel, shipments and communications. Incidentally, the people of our community also benefit as they have the advantages of regularly-scheduled air travel.

"Our contract air service has contributed materially to the nation's atomic energy program. It is truly economical of manpower, time and money."

The Bonanza, operated within its recognized limitations, proved practical from the start. Sometimes the fleet of lightplanes airlifted in one day as many as 150 atomic scientists between Los Alamos and Albuquerque. Limited passenger capacity is one of the lightplane's disadvantages but in this case it meant frequency of schedules, and Los Alamos was benefitted because its travelers could arrive or depart 10 or 12 times daily instead of twice or four times daily in large transports had these been practical.

Four years of progress has been restricted to improvements in safety and efficiency through skills in pilotage, maintenance and general operating techniques. Progress through equipment change has not been possible—until now. Last month Carco placed into operation the first newly-designed Twin-Bonana to be delivered by Beech Aircraft Corporation. Regular deliveries of this small twin from production are not scheduled until next year, but Carco was able, by paying a premium covering the extra labor involved, to obtain the first two "hand-built" models to be released by Beech following CAA certification and approval of the design. A third one is on order for later delivery.

With the new twins, Carco is on

Although atomic airlift Bonanzas have a perfect safety record, newly-developed 6-place Twin-Bonanzas are being added to improve service through more schedules. No other twin-engine plane tried at Los Alamos has been capable of single-engine take-offs from this 4,000-ft. mountain strip. It has Lycoming engines of 260 hp. each and full-feathering propellers.
—(FLIGHT MAGAZINE Photo.)

the threshold of a new era in small airline standards never before possible because no twin before it ever offered as much performance as the new Twin-Bonanza. For example, it operates satisfactorily on one engine in an emergency from the mountain-top Los Alamos air strip where predecessor twins either could not operate on one engine or offered such marginal single-engine performance as to be impractical. It can also maintain 8,500 to 9,000 ft. or so of altitude on one engine at gross load, being able to complete flights in case of engine failure over the mountainous terrain where Carco operates. Thus night operations are made safe and practical for the first time for the atomic airlift, and round-the-clock scheduling can greatly increase the usefulness of the air service to the community it serves.

Because of the new twin's significance to air transportation in general, we went to Los Alamos to see for ourselves how Carco's transition was being effected and how the new aircraft performed in actual commercial operations. We had been there three years ago shortly after the atomic airlift was inaugurated, and this was an opportunity to check up on the hilltop's service.

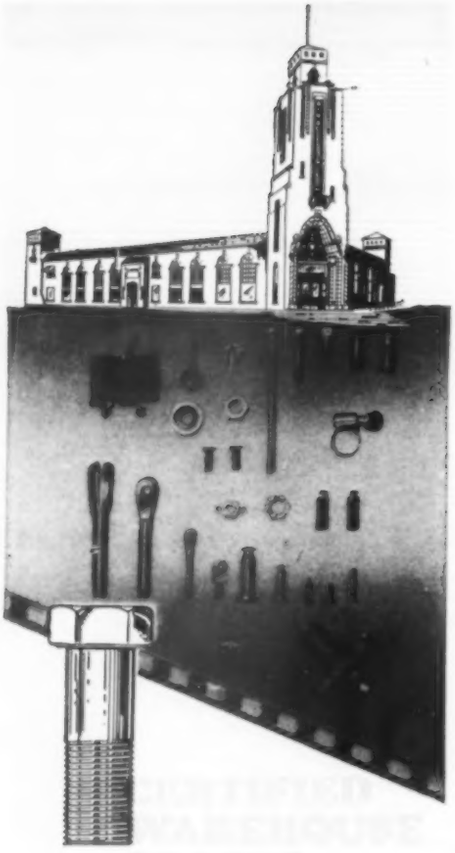
Clark Carr of Albuquerque, long-time barnstormer and aircraft operator in the Southwest and South America before he established Carco Air Service, was all smiles over his new little twin. "It works," he said on our arrival. "It does more at altitude strips than any twin ever did." Continuing, he said the first Twin-Bonanza had carried 91 passengers the first three days of its scheduled operations. That's working, for the Twin-Bonanza is a 6-place airplane, with pilot and 5 passengers.

By "it works," Carr referred to twin-engine safety in taking off from the mountain strip at 7,100-ft. altitude. The first thing done with the Twin-Bonanza was a demonstration of this safety. Loaded to full 5,500-lb gross, it was accelerated to 90 mph. and braked to a stop on the 4,000-ft. strip. Thus, in case of an engine failure during the take-off run, it can be brought to a safe stop on the ground from 90 mph., which is above the airplane's safe single-engine take-off speed. The next test was to accelerate to 90 mph. on take-off, feather an engine, and complete the take-off on one engine. Again it was loaded to gross weight of 5,500 lbs., and when the engine was feathered the Twin-Bonanza maintained 90 mph. and climbed out at 60 feet per minute. This has been done many times at lower altitudes with higher rate of climb, but the Los Alamos test was the first at such an elevation above sea level. Air temperature was 65 degrees F.

Rate-of-climb on both engines is phenomenal in the Twin-Bonanza at this altitude. At its best climbing speed, which is about 105 mph. indicated air speed, it climbs out from Los Alamos at about 800 ft. per min. At cruising climb speed of about 125-

(Continued on page 69)

Landing at Los Alamos, Twin-Bonanza was photographed just before touching down. Flown as first section on each schedule, Carco's No. 1 Twin-Bonanza carried 91 passengers first 3 days of its operation.
—(FLIGHT MAGAZINE Photo.)



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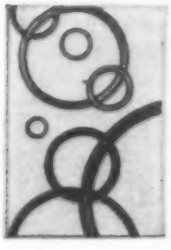

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AMC SUPPLY

CAB Decrees Local Service Carriers Must Remain "Local"

IN a determination of policy announced September 25, 1951, the Civil Aeronautics Board stated that it would add a provision to certificates of local air service carriers to make it clear that their operations are definitely local air transportation as distinguished from the service rendered by the scheduled trunkline air carriers. The language which will be included in local service certificates, as they are renewed, is:

> "This certificate is issued pursuant to a determination of policy by the Civil Aeronautics Board that in the discharge of its obligation to encourage and develop air transportation under the Civil Aeronautics Act, as amended, it is in the public interest to establish certain air carriers who will be primarily engaged in short-haul air transportation as distinguished from the service rendered by trunk-line air carriers. In accepting this certificate the holder acknowledges and agrees that the primary purpose of the certificate is to authorize and require it to offer short-haul air transportation service of the character described above."

The Board indicated that the provision to be inserted in the certificates of public convenience and necessity of local air carriers is consistent with a resolution adopted by the local service carriers at their 1951 Local Service Seminar at Purdue University sponsored by FLIGHT MAGAZINE in June, wherein the local air carriers themselves unanimously agreed: ". . . that it is their intention to continue to fulfill solely the responsibilities of local service carriers and remain local service carriers." ★ ★ ★

AIR REPORT

(Continued from page 7)

chase of 30 new-type DC-6's for $35,000,000 in addition to 17 being delivered this year at $19,000,000. Postwar DC-6 sales now total 315 planes, exclusive of military orders.

FLIGHT TRAINING EVALUATION OF TEMCO BUCKAROO AND BEECH MENTOR is under way at Goodfellow Air Force Base, San Angelo, Texas, with 9 cadets assigned to the Temco and 6 to the Beech in an experimental project. Each student will receive 130 hrs. of instruction. Orders for new trainers are expected eventually to result from the evaluation.

CROSS-WIND LANDING GEAR developed by Goodyear is being tested on a C-54. . . . **DIESEL POWER FOR LIGHTPLANES** is being studied by Taylorcraft, with a T-Craft 18 now flying with a 125-hp. air-cooled diesel power plant.

JET POWER PLANT DEVELOPMENT by Hiller Helicopters is now being accelerated by a new division of the company. Projects range from small jets for single-seater 'copters to large engines for transport helicopters. Whirl stands will produce supersonic air speeds for rotor tips.

CHANCE VOUGHT F7U CUTLASS FIGHTERS made their first carrier take-offs and landings at sea recently, in qualification and evaluation exercises.

BEECH BONANZA PRODUCTION is about 70 per cent of last year's output, but is being increased during the last quarter. The Twin-Bonanza demonstration tour is now in the Northwest, having visited 20 distributorships and flying 2,200 passengers on hops. . . . **BEECH IS ESTABLISHING PRODUCTION FACILITIES** at Liberal, Kansas, for military work not disclosed.

TWO-PLACE TF-51 MUSTANG TRAINERS produced by Temco have passed final acceptance tests and are being delivered to USAF. Major engineering changes were effected to provide two completely equipped cockpits in F-51D's. Test pilots say 2-seater flies better than single-seater.

ELIMINATION OF SPARK PLUG FOULING is claimed for new Shell Oil Company fuel ingredient. . . . **BOEING ENGINEERS HAVE PERFECTED AN ANTI-FOULING SPARK PLUG** described as utilizing a special pre-combustion chamber to protect electrodes and other critical parts.

NEW CONVAIR 340 TRANSPORTS on order total over 100 following an order for three from Philippine Air Lines. Fifteen carriers now operate Convair 240's. These planes, plus new models on order, now number nearly 300.

THIRD ANNUAL ALL-TEXAS AIR TOUR got under way Oct. 6 for a seven-day itinerary making it the nation's longest state tour with 3,000 miles to be covered. Sponsored by Texas Flying Farmers, Texas State Aviation Association, Texas Private Fliers Association and Texas Aeronautics Commission, it focuses attention on role of private planes in emergencies or defense. Cliff Green, former airport manager at Temple, is now Texas Aeronautics Commission director, succeeding Asbury Meadows who resigned.

U. S. JET ENGINE PRODUCTION IS 6 MONTHS BEHIND SCHEDULES set by military planners, due to acute machine tool, materials and components shortages. . . . **U. S. AIRCRAFT INDUSTRY** has built more different jet plane types and produced more jet planes of all types than all the rest of the world combined, with the exception of Russia, says the Aircraft Industries Association. This record includes 53 different jet types of planes, 20 different types of jet en-

CLASSROOM *in the clouds*

► Nearly a year of intensive air and ground training is needed to qualify an Air Force student as a navigator. To speed up the training program, the Air Force now instructs groups of 10 to 14 men simultaneously in flying classrooms equipped with Sperry instruments.

► Minimum tie-ups of valuable manpower and equipment . . . realistic training in navigating and tactical procedures . . . individual instruction of trainees are the results of the speeded up training program in the new Convair T-29 flying classrooms.

► Students have finger-tip access to Sperry equipment which helps them solve involved navigational problems—even extremely difficult ones met over unchartered polar areas.

► Sperry navigational facilities provided are the Gyropilot*, its standard accessory, Automatic Approach Control, and flight instruments for attitude and direction. Fourteen repeaters . . . one at each student station . . . are controlled by the Master Gyrosyn*Compass. Thus Sperry—by providing the very latest aids to navigation—helps the U. S. Air Force develop new "men of precision."

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gines and a series of rocket engines. At present the industry is producing 8 advanced types of jet fighters and 5 jet bomber types. One 8-jet bomber has been tested and two new 8-jet super bombers will fly late this year (Boeing and Convair). . . . **GREAT BRITAIN HAS 3 TO 5-YEAR LEAD** in turbine-powered commercial transports, thanks to its $400,000,000 government subsidy. Douglas Aircraft Company Treasurer H. W. Strangman says U. S. airline industry is not ready to absorb jet transports but when the time comes the U. S. will produce the best jet transports available anywhere.

TREMENDOUS SAVINGS IN LARGE AIRCRAFT CONSTRUCTION have been accomplished by Lockheed through a newly-engineered wing panel described as the start of a new school of airplane design. Largest single piece of aircraft wing ever made, it is a self-stiffening panel 32 ft. long and 4 ft. wide. A 323-lb. aluminum alloy strip, it was milled out of a solid, 900-lb. slab of metal. Each such panel eliminates 5,000 rivets, representing over 300 man hours of riveting, and replaces complicated assemblies composed of some 1,500 different parts. Six years of engineering produced the radical panel. It was perfected for production of Super Constellations, 68 of which are on order for seven airlines at a cost of $100,000,000.

PRATT & WHITNEY J-42 TURBO-WASP has become the first jet aircraft engine for which the Navy has authorized 1,000-hr. overhaul intervals. Rated at 5,000 lbs. thrust dry and 5,750 lbs. thrust using water injection, the J-42 was the predecessor of the newer and more powerful P & W J-48. Amazing durability has been claimed for the J-42 by Pratt & Whitney, which says Navy and Marine pilots report the engine has "swallowed" rocks, 3-in. tree trunks and other debris in their air intakes "without serious damage or loss of efficiency." One such report covered a machine-gun bullet from enemy ground fire which entered a J-42 combustion chamber tearing a 2.5-in. hole in the cover. It then passed through nozzle guide vanes and entered the turbine, which was whirling at 12,000 rpm. The bullet swirled around the turbine several times, curling its blades to two-thirds their normal area, before passing out the tail pipe. The Marine pilot of the Grumman Panther said he felt only a slight jar and made several more attacks, using full throttle without any loss of power or speed. Then he flew 20 mins. more at full power, followed by 80 mins. at cruising power to reach home base. Slightly higher fuel consumption and a 2 per cent increase in engine rpm. indicated the major damage which had been done by the bullet.

THREE WAR SURPLUS TRANSPORTS offered on bids by CAA at its Oklahoma City Aeronautical Center brought a total of $800,000. TWA paid $320,001 for a Lockheed Constellation after two C-54's had earlier brought over $500,000 from Eastern Air Lines and Trans Ocean Airlines.

WHAT LOOKS LIKE COMMENDABLE LOGIC AND COMMON SENSE marks a recent Civil Aeronautics Board decision permitting Alaskan pilot-owners to engage in limited air carrier operations for 5 more years under an existing exemption. Certificated carriers cannot conveniently operate the sporadic service required by the scattered population of Alaska, says CAB. "Although the Alaskan pilot-owner operations in 4-passenger aircraft sometimes duplicate route segments of scheduled carriers, this type of emergency and casual service is necessary because of the terrain, weather and wilderness," an official statement explained.

AUTOMATIC ALTITUDE CONTROL UNIT for the widely-popular Lear L-2 autopilot has been placed on the market by Lear, Inc., and its 64 distributors. Said to be accurate to within plus or minus 50 ft. and useful with autopilots of other makes, the Lear unit is housed in a cylinder 3.78 ins. in diameter and 2.75 ins. high. It weighs only 1.1 lbs.

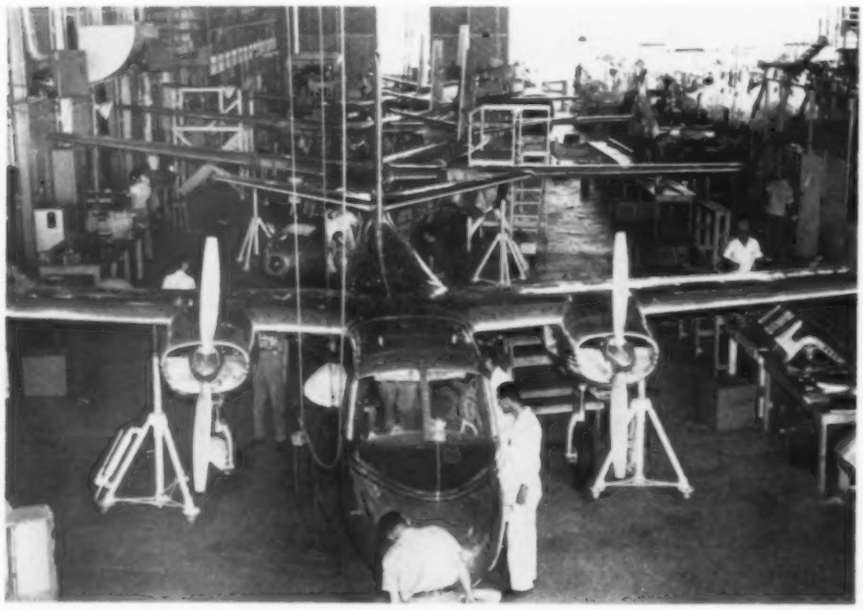
T-6G TRAINERS are being turned out by North American Aviation at its recently re-activated Columbus (Ohio) plant. They are remanufactured versions of the wartime AT-6.

NEW ORDERS FOR F7U-3 CUTLASS FIGHTERS from the Navy have been received by Chance Vought Aircraft in Dallas. Three thousand additional employes will be added. . . . **MORE B-36 BOMBERS** have been ordered from Convair at Fort Worth. . . . **TEMCO HAS NEW C-54 RECONDITIONING CONTRACT,** has large-scale overhaul project under way at Greenville, Texas, air base plant. . . . **WAR SURPLUS B-29 BOMBERS** are being flown from storage at Pyote, Texas, to Marietta, Georgia, where Lockheed is remanufacturing them before launching into production of Boeing B-47 jet bombers.

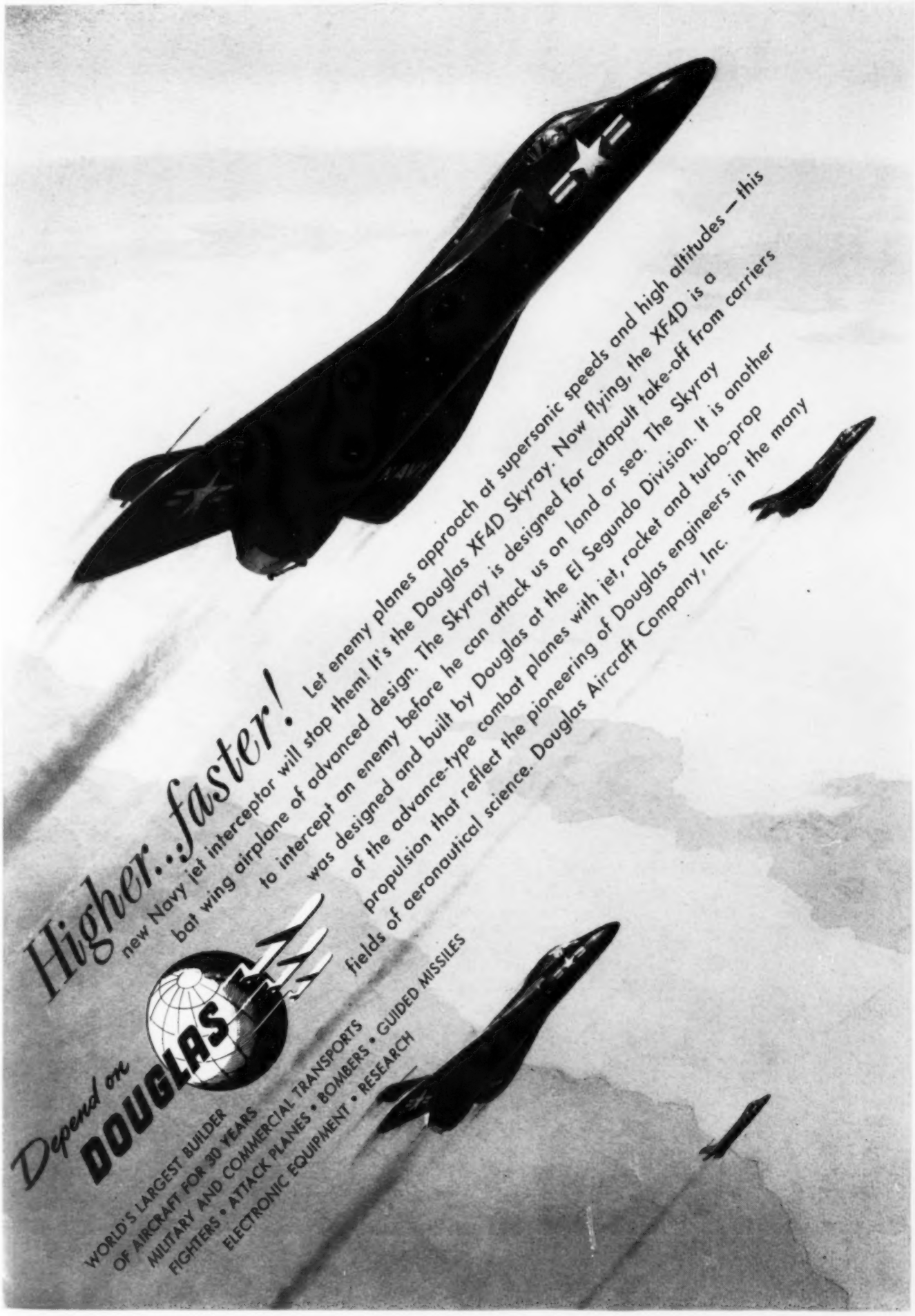
A SECOND EXTENSION OF THE DEADLINE FOR AIRMAN ID CARDS has been made by CAB. The new deadline is December 15. It had been October 1. The Board said CAA safety agents in the field reported many airmen found it impossible to obtain birth certificates and other necessary documents prior to Oct. 1.

A NEW SPRAY APPLIED BY ATOMIZER TO GLASS SURFACES COMBATS WINDOW FOGGING in aircraft. It was developed by Regal Air Corp., 500 Fifth Ave., New York, and is known as RA-12. The same firm developed the FC-10 Rain Repellent now widely used.

EXCELLENT BOOKLETS ON ITS L-2 AUTOPILOT AND ITS NEWER LEARMATIC NAVIGATOR are available from Lear, Inc., 11916 West Pico Blvd., Los Angeles 64, Calif. Pictures illustrate all operations.



AERO COMMANDER PRODUCTION LINE IN OKLAHOMA CITY was photographed as No. 1 production airplane was rolled off at the end of August, with five more airplanes nearing completion behind it. Test Pilot Bert Bantle was nearing completion of certification tests in October and General Manager Ted Smith was planning to roll off two planes weekly beginning in November. Over 45 of the $45,000, 6-pl. twins have been ordered. They are powered with 260-hp. Lycomings. President Rufe Amis said No. 1's performance in tests was running according to engineering estimates. Production model differs from prototype with new-type nacelles, larger cabin interior, new-type windshield, elaborate instrument panel with dual control columns and rudder pedals and other improvements. —(Aero Design & Engineering Photo.)


Higher...faster!
new Navy jet interceptor will stop them! It's the Douglas XF4D Skyray. Now flying, the XF4D is a bat wing airplane of advanced design. The Skyray is designed for catapult take-off from carriers to intercept an enemy before he can attack us on land or sea. The Skyray was designed and built by Douglas at the El Segundo Division. It is another of the advance-type combat planes with jet, rocket and turbo-prop propulsion that reflect the pioneering of Douglas engineers in the many fields of aeronautical science. Douglas Aircraft Company, Inc.
Let enemy planes approach at supersonic speeds and high altitudes — this
Depend on
DOUGLAS
WORLD'S LARGEST BUILDER OF AIRCRAFT FOR 30 YEARS
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BECAUSE their Authorized Cessna Service is carefully designed and maintained to satisfy all the service needs of Cessna owners everywhere, you'll want to remember the operators listed on this page beneath the famous Cessna Sign of Service.

These Authorized Cessna Service Operators stock genuine Cessna parts and factory-approved accessories and supplies for your Cessna. They are specially equipped to satisfy your needs with factory methods and factory training. Their work is based on nationwide factory standards of repair and overhaul, the result of factory-coordinated analysis of time work which eliminates guessing and guarantees dependable flat rates to Cessna owners.

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Denver, Colorado

Hair Flying Service
Harding Field
Baton Rouge, Louisiana

Mustang Aviation, Inc.
Mustang Airport
Dallas, Texas

Ragsdale Flying Service
Municipal Airport
Austin, Texas

Southwestern Skyways, Inc.
Ragle Airpark
Santa Fe, New Mexico

Kenneth Starnes Aviation Service
Adams Field; Little Rock, Arkansas

West Texas Flying Service
Midland Airpark
Midland, Texas

Yingling Aircraft, Inc.
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Wichita, Kansas

It's Rugged... Roomy... Comfortable!

Cessna 170

IT'S AMERICA'S LOWEST PRICED 4-PLACE, ALL-METAL PLANE...

by Several Thousand Dollars

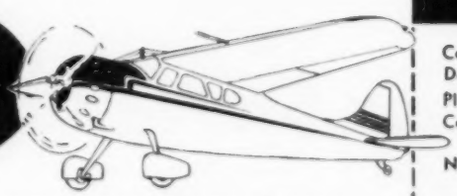
WHAT DO I WANT IN MY NEW AIRPLANE?

1. *All-metal construction? A must.*
2. *High cruising speed with economy? Definitely.*
Open it up side by side with any other new airplane under $12,000. You will get more miles per gallon at high cruising speed than anything else in its class. Check results of recent efficiency races.
3. *Big enough so 4 adults travel in comfort? Yes.*
Room for four adults to ride several hours in comfort, plenty of leg room in rear and front seats.
4. *Low noise level? Yes.*
Try conversing during flight from front to rear seats in normal tones, again the best.
5. *Abundant pay load? Yes.*
Carry four people, and baggage and gas for a 500-mile jump (full tanks of gas). You can do this safely in the Cessna, without exceeding the C.A.A. certified pay load of the airplane.
6. *Over-all reliability? Yes.*
Rugged construction, spring steel landing gear, proven power plant, built-in quality, backed up by years of experience building fine airplanes.

Examine the Cessna 170 from propeller to rudder—you will find outstanding quality throughout... very rugged construction... performance to easily handle the job.

During 1950, the Cessna 170 outsold all other four-place airplanes, regardless of price.

Cessna 190 SERIES



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THAT'S FLYING EXPERIENCE—over three million miles—*every* week! Internationally famous, Constellations carry *more* people over more oceans and continents than any other *modern* transport. Experienced Constellation service also excels at home.

Four great domestic airlines now offer dependable Constellation service to principal U. S. cities! Next time you travel choose one of the *fifteen* world airlines that fly experienced Constellations.

KOREAN BOOMERANG — Like Lockheed's famous Hudson Bomber ("Old Boomerang") of WW II, the F-80 *Shooting Star* has proved rugged in combat. Built to take terrific battle damage yet return to base, the F-80 did exactly that in Korea . . . another "Boomerang."

SCIENCE OF DEPENDABILITY — Lockheed's new Electronics Building will house an advanced "Weather Laboratory," where every effect of weather can be studied first-hand...increasing the *experience* behind Lockheed dependability.

Fly Constellations Via:

IN THE U.S.—Capital Airlines, Chicago & Southern Air Lines, Eastern Air Lines and Trans World Airlines.

OVERSEAS—Air France, Air India, AVIANCA, B. O. A. C., Israel Airlines, KLM, L. A. V., Pan American, Panair do Brasil, QANTAS, South African Airways, TWA.

Lockheed

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Look to Lockheed for Leadership

Lockheed

BEGINS WORK ON GIANT JET BOMBER

Production of an undisclosed number of giant B-47 jet bombers has begun at Lockheed's Marietta, Georgia, factory.

As the world's leading producer of jet aircraft and modern high-speed transports, Lockheed is especially qualified to build the Boeing-designed B-47's for the Air Force. Production floor space at Marietta, plus Lockheed's California factories, makes Lockheed as large today as the entire U.S. air-frame industry in 1940.

What's going on at Lockheed?

Lockheed has developed a high-speed camera with a speed range of from 1,000 to 3,000 frames a second. At 3,000 per second, a 100-foot roll of 16-mm film goes through the camera in 1¼ seconds. Purpose of the speed: to check results when fast-dropping die hits a blank piece of metal. Objective: development of stronger, new-type alloys for greater, faster aircraft . . . Another current research project creates arctic flying conditions 20,000 feet above the California desert. On an actual F-94 All Weather Jet Fighter, a spray bar shoots a fine, foggy mist on the nose and wing, building up layers of ice. Plane's de-icing equipment is thus tested in actual flight.

Past and future at Lockheed...

One of Lockheed's earlier transports, a Model 10 Electra, is approaching its 25,000th hour of flying time, in continuous service since 1937 for South Coast Airways, Pty., Ltd., of New South Wales (Australia)... New Lockheed Super Constellations, in service by year's end, will be the largest, fastest, rangiest commercial transports in service. So well have earlier Constellations proved themselves around the world that more than 100 Super Constellations were ordered before the first production model flew... The new Lockheed-developed thin wing for the advanced F-94C—so thin it looks almost fragile—is strong enough to support two fully-loaded Super Constellations (150 tons dead weight)—one at each wing tip. This new plane, America's continental defender because of its electronic superiority, contains enough installed electrical power to supply a small community.

LOCAL SERVICE DIRECTORY

(Continued from page 45)

Francisco Airport, South San Francisco, California. John H. Connelly, president; T. R. Mitchell, vice president; H. S. White, vice president—traffic and sales; A. W. Johnson, treasurer; Walter Roche, secretary.

R. C. Couk, director of ground operations; J. W. Brown, director of flight operations and chief pilot; R. E. Costello, general traffic manager; E. H. Slingsby, comptroller; E. A. Rein, Jr., director of communications; W. Harry Barnes, superintendent of engine overhaul; S. M. Jessen, superintendent of line maintenance.

TRANS-TEXAS AIRWAYS, Municipal Airport, Houston, Texas. Earl McKaughan, president; Henry W. Erdman, vice president — operations; M. Lamar Muse, secretary-treasurer.

Cliff M. Ewens, general traffic and sales manager; W. W. Blanton, manager of advertising and public relations; Charles Baker, superintendent of engineering; E. William Helken, superintendent of communications; Howard Whately, superintendent of maintenance; Charles Bursiel, superintendent of stations; H. E. Bradley, purchasing manager.

WEST COAST AIRLINES, INC., Boeing Field, Seattle, Washington. Nick Bez, president; H. A. Munter, executive vice president; R. A. Duwe, secretary-treasurer.

E. B. Code, operations manager; D. S. Vaughan, superintendent of maintenance.

WIGGINS AIRWAYS, Logan International Airport, Boston, Massachusetts. Joseph Garside, president; Harold E. Shaw, executive vice president and treasurer; Elmer W. Wiggins, Jr., vice president—operations; Frederic S. Tobey, secretary and traffic-sales manager.

Clifford J. Fuller, Jr., operations manager; Ralph Hynes, chief pilot; Fred Valentine, superintendent of maintenance.

WISCONSIN CENTRAL AIRLINES, INC., Municipal Airport, Madison, Wisconsin. Francis M. Higgins, president; H. N. Carr, executive vice president; D. G. Hendrickson, vice president — operations and maintenance; Frank N. Buttomer, vice president — traffic and sales; Arthur E. Schwandt, secretary-treasurer.

R. J. Ceronsky, chief pilot; Ray Noetzel, superintendent of maintenance; T. M. Needham, superintendent of stations; L. E. Cleland, superintendent of communications.

LOCAL SERVICE AIRLINES
Comparison of U. S. Mail Ton-Miles Flown
Second Quarters 1950 and 1951

Airline	Second Quarter 1950	Second Quarter 1951	% Increase
All American	11,125	14,374	29.20
Bonanza	1,353	1,738	28.46
Central	3,886	5,370	38.19
Empire	4,818	6,239	29.49
Frontier	12,917	33,170	156.79
Lake Central	1,457	3,233	121.89
Mid-Cont. 106	..	5,825	..
Mid-West	4,903	2,537	(48.26)
Ozark	..	5,869	..
Piedmont	13,086	16,133	23.28
Pioneer	22,631	26,333	16.36
Robinson	5,458	6,749	23.65
Southern	10,391	22,779	119.22
Southwest	12,185	15,989	31.22
Trans-Texas	13,541	13,587	0.34
West Coast	1,827	4,199	129.83
Wiggins	501	412	(17.77)
Wisc. Central	9,699	14,348	47.93
Total	129,778	198,884	53.25

LOCAL SERVICE AIRLINES
Comparison of Break-Even Needs
(Cents Per Revenue Mile)
Second Quarters 1950 and 1951

Airline	Second Quarter 1950	Second Quarter 1951
All American	55.08	48.14
Bonanza	51.93	64.79
Central	31.79	*94.96
Empire	48.40	39.06
Frontier	62.89	54.46
Lake Central	41.41	18.26
Mid-Continent 106	..	38.36
Mid-West	36.02	44.55
Ozark	..	..
Piedmont	31.14	10.10
Pioneer	28.62	22.55
Robinson	36.41	31.24
Southern	70.73	53.37
Southwest	26.07	25.48
Trans-Texas	52.31	56.52
West Coast	42.28	20.69
Wiggins	57.60	49.02
Wisconsin Central	59.24	*55.15

*Equipment Change.

LOCAL SERVICE AIRLINES
Comparison of Revenue Miles Flown
Second Quarters 1950 and 1951

Airline	Second Quarter 1950	Second Quarter 1951	% Increase
All Amer.	817,809	840,600	2.79
Bonanza	230,998	234,242	1.40
Central	473,691	354,449	(25.17)
Empire	284,555	327,102	14.95
Frontier	836,050	1,127,994	34.92
Lake Cent.*	258,937	648,492	150.44
Mid-Cont. 106	..	246,205	..
Mid-West	396,198	200,692	(49.35)
Ozark	..	532,129	..
Piedmont	956,585	1,057,254	10.50
Pioneer	927,540	1,008,573	8.73
Robinson	291,287	391,251	34.32
Southern	436,868	789,302	80.67
Southwest	600,492	653,650	8.85
Trans-Texas	746,221	743,468	(0.37)
West Coast	342,885	384,632	12.18
Wiggins	91,760	143,383	56.25
Wisc. Central	520,750	511,311	(1.81)
Total	8,212,626	10,194,729	24.13

*Military Charter included.

LOCAL SERVICE AIRLINES
Comparison of Revenue Passengers Carried
Second Quarters 1950 and 1951

Airline	Second Quarter 1950	Second Quarter 1951	% Increase
All American	41,639	57,898	39.05
Bonanza	4,955	7,651	54.41
Central	2,858	7,280	154.72
Empire	10,827	13,956	28.90
Frontier	15,057	26,888	78.57
Lake Central*	4,124	16,118	290.83
Mid-Cont. 106	..	11,265	..
Mid-West	1,944	703	(63.84)
Ozark	..	12,178	..
Piedmont	33,109	50,451	52.38
Pioneer	32,445	42,131	29.85
Robinson	15,055	26,699	77.34
Southern	8,976	24,419	172.04
Southwest	31,515	36,685	16.40
Trans-Texas	15,889	19,582	23.24
West Coast	20,098	24,562	22.21
Wiggins	766	1,242	62.14
Wisc. Central	12,880	26,267	103.94
Total	252,137	405,975	61.01

*Military Charter included.

LOCAL SERVICE AIRLINES
Comparison of Revenue Passenger Miles Flown
Second Quarters 1950 and 1951

Airline	Second Quarter 1950 (thousands)	Second Quarter 1951 (thousands)	% Increase
All American	5,924	8,191	38.27
Bonanza	1,178	1,970	67.23
Central	333	1,040	212.31
Empire	2,257	2,656	17.68
Frontier	4,168	7,178	71.48
Lake Central*	1,013	8,312	720.53
Mid-Continent	..	2,350	..
Mid-West	285	105	(63.16)
Ozark	..	2,019	..
Piedmont	6,755	11,709	73.34
Pioneer	8,797	11,012	25.18
Robinson	2,353	4,151	76.41
Southern	1,495	4,408	194.85
Southwest	5,807	7,411	27.62
Trans-Texas	3,523	4,702	33.47
West Coast	2,827	3,851	36.22
Wiggins	64	115	79.69
Wisc. Central	2,042	4,299	110.53
Total	48,839	85,479	75.02

*Military Charter included.

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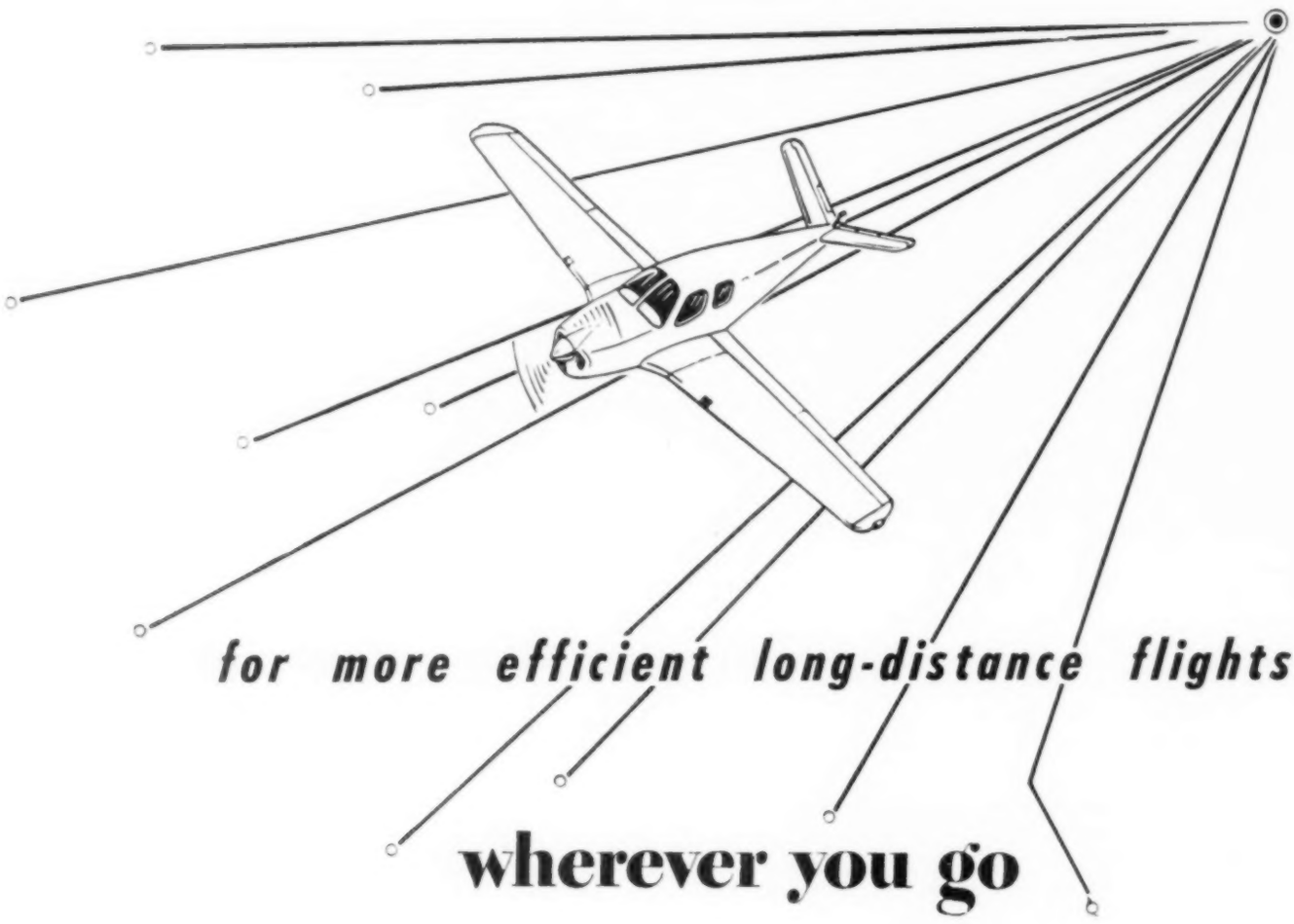

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San Antonio, Texas

Anderson Air Activities
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Truax Field
Madison, Wisc.

Atlantic Aviation Service
New Castle County Airport
Wilmington, Delaware

Atlantic Aviation Corp.
Teterboro Airport
(25 minutes from Times Square)
Teterboro, New Jersey

Butler Co., Aviation Division
Municipal Airport
Chicago, Ill.

Currey Sanders Aircraft Co., Inc.
Downtown Municipal Airport
Shreveport, La.

Francis Aviation
Capitol City Airport
Lansing, Michigan

Gray Aircraft Svc. Co., Inc.
D. A. Cody, Service Mgr.
Love Field, Dallas, Texas

Harte Flying Service
Municipal Airport
Wichita, Kansas

Hunter Flying Service, Inc.
Hunter Field
Cedar Rapids, Iowa

Ohio Aviation Company
Dayton Municipal Airport
Vandalia, Ohio

J. D. Reed Co., Inc.
Municipal Airport
Houston, Texas

Roscoe Turner Aeronautical Corp.
Municipal Airport
Indianapolis, Ind.

Tradewind Airport Corp.
Tradewind Airport
Amarillo, Texas

Tulsair Distributors, Inc.
Hangar 5, Municipal Airport
Tulsa, Oklahoma

Wings, Incorporated
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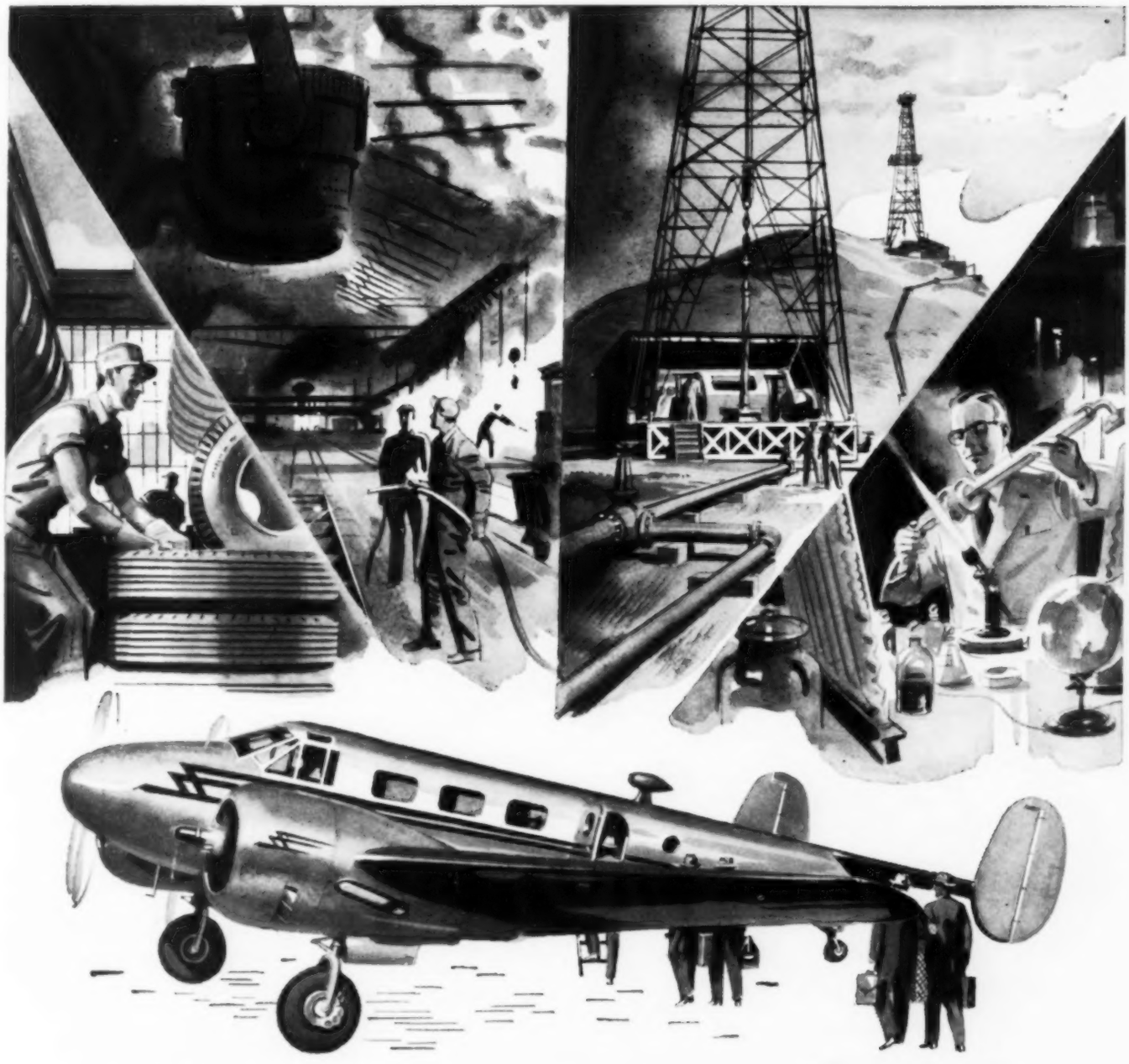
Ambler, Pennsylvania

Philadelphia International Airport
Philadelphia, Pennsylvania



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When a company-owned Beechcraft turns travel days into travel hours, management's "personal touch" re-enters the picture. When key men travel at 200 mph, they can afford to travel more. Efficiency is higher because management *knows* what's going on. This is why so many Beechcrafts serve America's industrial giants—steel, rubber, oil, chemicals, glass.

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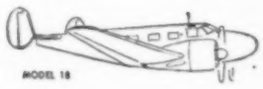

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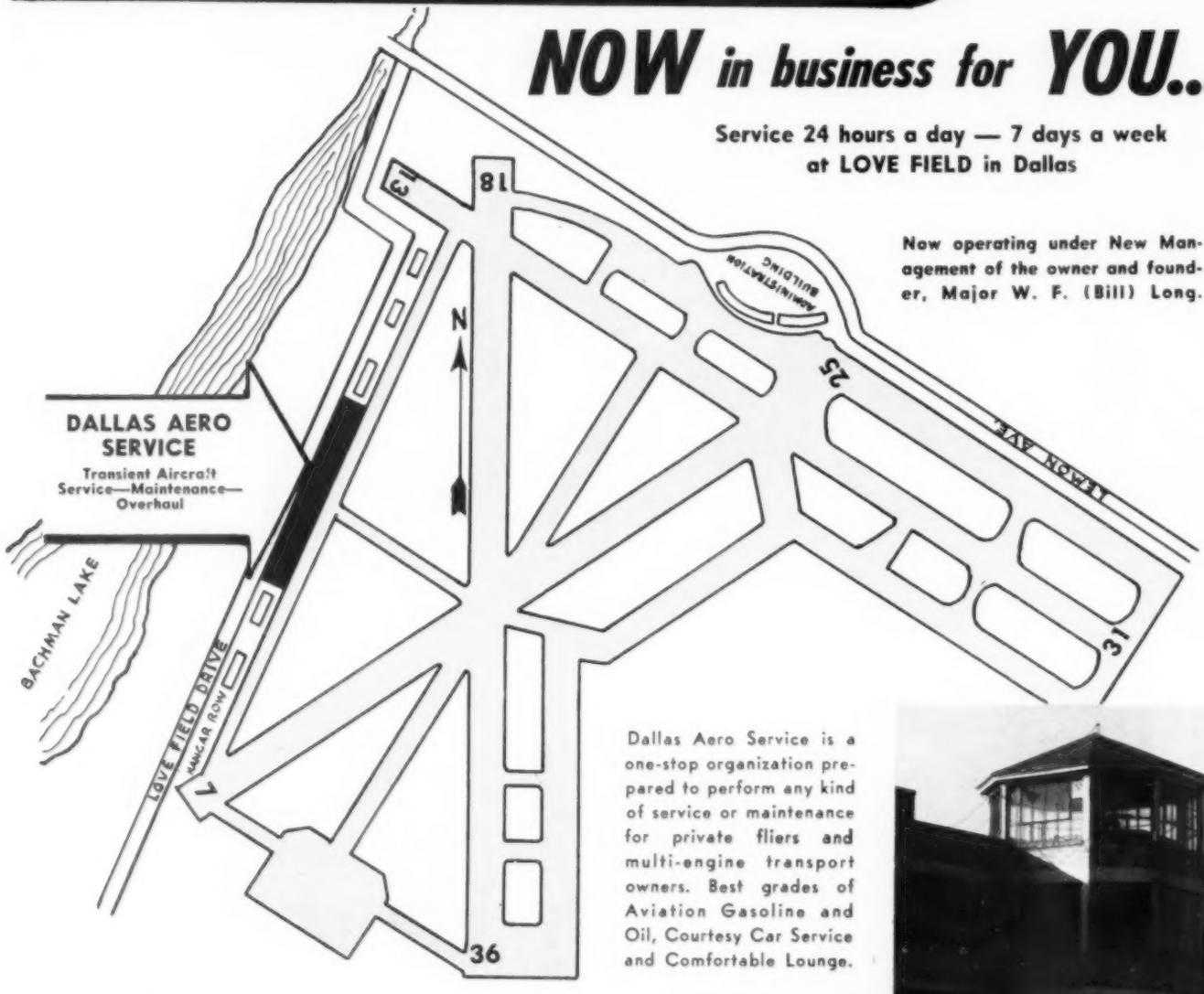

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Airmen's Calendar

Oct. 11-12 — 1951 Conference on Airport Management and Operations, University of Oklahoma, Norman, Oklahoma.

Oct. 24-25—National Association of State Aviation Officials Annual Convention, Tucson, Arizona.

Nov. 7—Annual Wings Club Dinner, Waldorf-Astoria Hotel, New York City.

Nov. 13-16 — National Aviation Trade Association Annual Convention, Fort Worth, Texas.

Oct. 18-20—Arizona Aviation Conference, Hotel Adams, Phoenix, Arizona.

JUST AMONG OURSELVES

(Continued from page 13)

"This is no small-time, single-process show that can be stopped and started by the snap of a finger. This is the longest manufacturing river in the world! It's the Mississippi of manufacturing, and you can't get the big water out of the mouth of the Mississippi if you once shut it off at the source. And once you shut it off at the source, you can't suddenly turn it on and get the water out of the mouth of the river. It's got to flow just so fast and just so far and pick up its feeders along the line, and in the end you've got the big water flowing out at the mouth of the river.

"But with the military victory in Europe, we shut off our airplane river, right at the source! In the month of March, 1944, we produced over 9,100 military planes. Within a period of one month, from August to September 1945, we dropped from 28-hundred to less than 8-hundred. By the following summer (1946), America's powerful aviation industry was producing less than 100 military airplanes a month. To be exact: 66.

"Several dry years went by. Then suddenly someone discovered that Russia had an air force. 'Where did they get it?' everyone asked. This is how they got it—they just didn't ever stop building the one they had, as we did. We let our stream run so dry, however, that back in 1946 and 1947 it looked as though America wouldn't even have a small Air Force. But a group of far-sighted men took note of the worsening world conditions in 1947 and began to urge immediate rebuilding of our Air Force. The President's Temporary Air Policy Commission, headed by Thomas Finletter—and the Hinshaw-Brewster Congressional Board came up with virtually the same recommendation: namely, rebuild aircraft production on a gradually intensified scale.

"So, in 1948, we began to turn the

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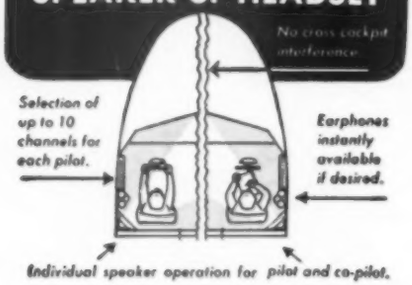
No cross cockpit interference.
Selection of up to 10 channels for each pilot.
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- More Freedom of Control
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water back into the stream. But that shutoff in 1945 is now costing us the time and the big money. We, as manufacturers, have been trying to stress this fact for years. Yet there's still a general and widespread lack of appreciation for the time-lag in aircraft production. Stopping and starting this complicated process of aircraft manufacturing is not as simple as merely telling the plane-maker to stop and start. It means letting these hundreds of contributing organizations go out of the air business and making them find other lines to keep busy with—only to find that years later when we do try to get them back feeding us again, they aren't so keen to come back, or able to. Why should they be? By that time they can't just drop whatever they're doing and serve us all over again.

"Here is the hard core of it: In 20 years between World War I and World War II we spent an average of less than 28 million dollars a year for air—only to find that, to dig us out of World War II, we had to spend 28 million dollars *a day* . . . and for more than *four years!* We spent an average of about 1½ billion a year in the years 1946, 1947, 1948. Now we're having to spend 15¼ billions in just one year. And if conditions get worse — and they can — and if Senator Lodge's proposal for a 150-group Air Force were to be adopted—and it may have to be—it would call for 32 billion in fiscal '52, 27 billion in fiscal '53, and 37 billion in fiscal '54. That's what the feast-or-famine, turkey one day and feathers the next, costs us.

"When will the American people learn that steadiness in moderation—rather than enormity in a crisis—is better and cheaper?

"Air power is expensive enough in itself, but when we add to it this insane cost of stopping and starting, we do two things: First, we run the cost up into the stratosphere; second, when we stop building we lay ourselves open to world attack—and the money we *think* we save in so-called fair weather, we have to quadruple to dig us out of foul. Steadiness rather than size in the pinches is the thing. It will cost less and keep us out of trouble, while the all-out and all-in route will cost us more and get us into trouble. These 30-billion-dollar-a-year crises would never come up if we kept our guard up all the time, and it need cost only a fraction of the way we've been doing it for the last 30 years!"

To this we would add but one question: "When will our people and government wake up?" ★ ★ ★

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40,000 PASSENGERS

(Continued from page 55)

130 mph., its rate of climb from the mountain strip is 400 to 500 fpm.

The Albuquerque-Los Alamos route is flown at 8,500 ft. At this altitude, the Twin-Bonanza has a cruising true air speed of 190 mph. using 65 per cent of power as recommended for performance by the manufacturer. But Carco uses less power for more economical performance, dropping down to 19 inches of manifold pressure and 2,600 rpm. for about 57 per cent of rated power, or about 136 horsepower per engine. On this partial power, Carco's Twin-Bonanza indicates 148 mph. at 8,500 ft. for a true air speed of 171 mph. Faster cruise would not materially reduce trip time.

Passengers are finding the Twin-Bonanza as much to their liking as the Bonanza proved. It looks like a Bonanza, it seems to handle like a Bonanza, and it is more comfortable. In the Twin-Bonanza, three persons are seated on the rear seat and three on the front, including the pilot. Passengers have not objected to this—the ride is only a 25-minute hop. No complaints have been heard on the high-wing step-up for entering the Twin-Bonanza, which seems to be satisfactory.

From an operating standpoint, the new design is proving to be excellent. Its 190-mph. cruising speed, for example, is available at a fuel consumption of about 25.7 gals. per hour. Its Lycoming engines, each rated at 260 hp. for take-off at 3,400 rpm., and 240 hp. at 3,000 rpm. for continuous operation, are more accessible for servicing and maintenance than the engines on any other twin ever operated by Carco. This is due to some ingenious nacelle engineering by Beech, with easily removed cowl panels.

Carco has some ideas of its own to meet its heavy-traffic situation. One of these is that a 6-place airplane with two seats needs not one but two doors, one for the passengers and one for the pilot. With one door, located as it is on the right, the pilot is the first one in and the last one out, being unable to help the passengers as much as he would like, and having to reach across two front-seat passengers to lock or unlock the door. If structural problems won't permit two doors, the single installation would prove more desirable if the door were moved from the right to the left.

From a performance standpoint, Carco is like everybody else—engine superchargers are a No. 1 item for altitude operations. There has been considerable talk that Lycoming planned to supercharge the 260-hp.

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engines which power the Twin-Bonanza. Now that the international situation and rearmament have reached their current proportions, this development may not reach the practical stage for several years. Until then, the Twin-Bonanza is still capable of providing unprecedented performance for a multi-engine small airplane, however. Clark Carr and his pilots are convinced that their three Twin-Bonanzas are the best equipment investment they ever made, even at the premium price necessary to obtain hand-built versions.

As the new Twin-Bonanzas were delivered, Carco put them into service immediately. Now 12 flights daily the year round are to be flown, instead of 10 during the Winter and 12 during the Summer. Extra schedules after dark can be added as needed. Also, each of the 12 daily schedules is flown by a Twin-Bonanza. The extra sections are single-engine Bonanzas.

The Twin-Bonanza will not allow Carco to reduce its scheduled flights significantly because it is not significantly larger than the single-engine Bonanza in passenger capacity. To reduce schedules would be to decrease the service's usefulness to the community. What the Twin-Bonanza's extra engine provides more than anything else is greater dependability of schedules and an extra margin of safety for night and instrument flight.

While the amount of Bonanza flying has been considerable, some 13,582 hrs. of flight being logged in 46 months, Carco's Bonanza operation has maintained a perfect safety record. Growth of the Bonanza airlift is charted by the following figures:

Period	Miles Flown	Passengers Carried	U. S. Mail Carried (Lbs.)
1947*	97,272	1,267	.....
1948	360,150	6,762	15,663
1949	487,842	11,619	39,064
1950	508,980	12,520	55,702
1951‡	316,994	7,305	30,258
Totals	1,771,238	39,473	140,687

*Aug.-Dec., 1947. ‡Jan.-June, 1951.
NOTE: Mail is carried as a courtesy service, without Post Office pay.

These figures show the atomic airlift to have regular airline proportions. But Carco, even though it once applied for airline certification from the Civil Aeronautics Board, has a doubtful attitude towards becoming a regular airline. This is explained by Carr as follows:

"Obviously, the row-boat which paddles across a little pond cannot be expected to meet the same requirements as the 20,000-ton ocean liner, yet CAA and CAB seem unable to recognize and allow for the parallel as regards our small operation and those of a big, transcontinental carrier. We say this

because we do not feel existing CAA and CAB philosophy reflects any thought or consideration of our type of operations.

"A preliminary look at what we would have to do if certificated indicates our paper work would be at least tripled. Right now we are doing all right by limiting our payroll to a division of about 5 per cent for paper work and 95 per cent for work to keep the props turning. Immediately upon certification, our costs for paper work would go up with no more passengers or freight moved, no more miles flown, no safer know-how. So we doubt the advantages of becoming certificated."

Philosophy of Service

Carr and his associates are not only proud of being a "small" airline but are convinced their usefulness in transportation is dependent upon their remaining "small."

"We believe the concept which holds that *bigness* in aircraft is synonymous with safety in air transportation to be wholly and lamentably erroneous," says Carr. "We also feel that small planes should be operated on *frequent schedules* to give small communities maximum air service, and that small airlines should radiate out and back, or operate semi-circular or quadrilateral patterns, to shuttle passengers. cargo and mail into and out of trunk airline terminals."

The philosophy behind Carr's views is worthy of consideration in the extension of air service to the country's small towns. As long as big-airplane certificates limit service to one or two trips daily, many of these towns will never find a place on the air map. They simply can not conform to the needs of the big-airplane airlines. But if additional and small-scale air service is arranged to conform to the communities, with small planes and frequent trips, then small-town America can share in the benefits and development of modern air commerce.

The Bonanza airlift to the atomic city of Los Alamos is more of a shuttle operation between two points than it is an airline in the accepted sense of tying dozens of cities together over wide areas. But it represents an outstanding accomplishment of scheduled passenger service with small planes operated frequently and safely to satisfy the needs of an isolated community, population 12,000. A symbol, it suggests a basis upon which communities elsewhere might eliminate their isolation through the practical application of available small planes and experienced operating techniques. ★ ★ ★

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Questions and Answers for Airport Operators

Politics and Airport Hiring

QUESTION: In the city in which I live and have the job of head of the airport department, all the hiring of city employes is done through a central personnel department. The city has a civil service, examinations are held and eligible lists are established. From such lists the three top names are given any department head when he has an opening and he interviews the people whose names are given him and makes his selection.

The other day, I selected a man to work in the office and on the field as a sort of assistant to my assistant. He was top man on the eligible list and appeared to be a very personable and earnest individual. He hadn't been on the job twenty-four hours when one of the old timers here, who has a fixed-base operation, came to me and asked me if I was currying favor with the political bosses of the town. It seems the man I hired is married to the daughter of a man who is reputed to be a political power here.

That same afternoon a newspaperman told me I had an employe I had to like because I couldn't fire him. What do you think I ought to do?

ANSWER: So you picked him from the list and then found he was a relative — and probably not ineligible under the nepotism clauses of your local laws. You must have found him to your liking or you wouldn't have picked him. If you let that relationship influence your use of him and your fairness of treatment and training, you may be losing a good employe. In the first place he probably married the politician's daughter because he liked her and not because he wanted a job on the airport.

Try him out. See if he can't do the job in the manner you expected before you found out about him. Somehow we think you're worrying about his getting your job because he has connections. Quit it; that's ulcer stuff. If he can do that, your job wasn't very secure anyway.

If you set the stage for getting rid of him before you can possibly know how good he is at his work, you're being unfair to him and to yourself.

Give this man of yours a chance. Train him. Lead him. Like him if you can. Treat him with no more favoritism than you would anyone else. Then if he turns out to be a dud, terminate him on the basis of your determination. There are legitimate reasons for discharge in practically all civil service set-ups. If it gets you in bad with the boss, you'll have to face that, for

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if you keep a poor or disloyal employe because you're afraid to fire him, your own organization soon knows it and your position becomes untenable.

Realistic Bookkeeping for Airports

QUESTION: We have just closed our fiscal year and my expenditures exceeded my revenues in spite of a lot of hard work to make the airport self-sustaining. Actually, if all the rents and bills due the airport had been paid we would have been in the black a little. I received about $1,300 due in back rental within 10 days after the close of the fiscal year but the city finance officer ruled that we couldn't show this amount as taken in during last fiscal year.

All our accounts are kept in the general bookkeeping system at the city hall and a statement is rendered at the end of each month. We do not have a separate bookkeeping system for the airport. Is there any way we can remedy such a situation?

ANSWER: Normally, municipal accounting is on a cash basis. The end of the fiscal year is a sharp cut-off with no recognition of "Accounts Receivable". On the other hand, in most such systems, unpaid bills against the city as a result of goods or services procured, are covered by funds committed or reserved for that purpose for each debt during the fiscal year.

Under the bookkeeping set-up in many political sub-divisions also, no recognition is given to prepaid expenses. Take, for instance, a case where fire insurance is purchased on a three or five-year basis. Frequently it is found that the full cost of the policy is charged to the airport in the year it is procured and paid, instead of being spread over the full period of the policy. This isn't bad bookkeeping but is the fault of the type of bookkeeping generally used by municipalities and suited well to most of their functions.

It does not in fact give a full story of airport fiscal matters and the final statement of receipts and expenditures may be distorted by such practices under a cash system.

Business generally uses what is known as an accrual system. Under such a system of accounting such things as Accounts Payable, Accounts Receivable and Prepaid Expenses are recognized and the resulting financial statements are a true reflection of the financial situation. Many airports are adopting systems of accounting designed on an accrual basis in order to place their operations and accounts on a business basis. An airport is a business and a big one in many towns. Cash accounting does not fit its needs.

One of the reasons behind this trend toward good business accounting for airports lies in the movement toward

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Leighton Collins, Editor of Air Facts, has logged a comprehensive story, "5000 Miles by Omnigator," in Air Facts Magazine. He states, in summary, "A cross-country exploration and study of our elaborate omni-range and ILS facilities reveal that the system is incredibly good and that, for the first time, the small plane owner has something he can rely on in fair weather or foul, high or low, and especially in thunderstorm areas."

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CIVIL AIR REGULATIONS HANDBOOK FOR PILOTS. Summer, 1951, Vest-Pocket Edition, 50c. Ross Publications, Box 2092, Arlington 4, Va.

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Of FLIGHT MAGAZINE published monthly at Dallas, Texas, for October 1, 1951.

1. The names and addresses of the publisher, editor, managing editor, and business manager are: Publisher, Air Review Publishing Corp., 1901 McKinney Ave., Dallas, Texas; Editor, George E. Haddaway, 1901 McKinney Ave., Dallas, Texas; Managing Editor, Tom Ashley, 1901 McKinney Ave., Dallas, Texas; Business Manager, Fred N. Stones, Jr., 1901 McKinney Ave., Dallas, Texas.

2. The owner is: Air Review Publishing Corp., 1901 McKinney Ave., Dallas, Texas; Stockholders holding 1 per cent or more of stock: George E. Haddaway, Dallas, Texas; Tom Ashley, Dallas, Texas; Fred N. Stones, Jr., Dallas, Texas; Estate of Jno. W. Herbert, Fort Worth, Texas.

3. The known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.) None.

4. Paragraphs 2 and 3 include, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting; also the statements in the two paragraphs show the affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner.

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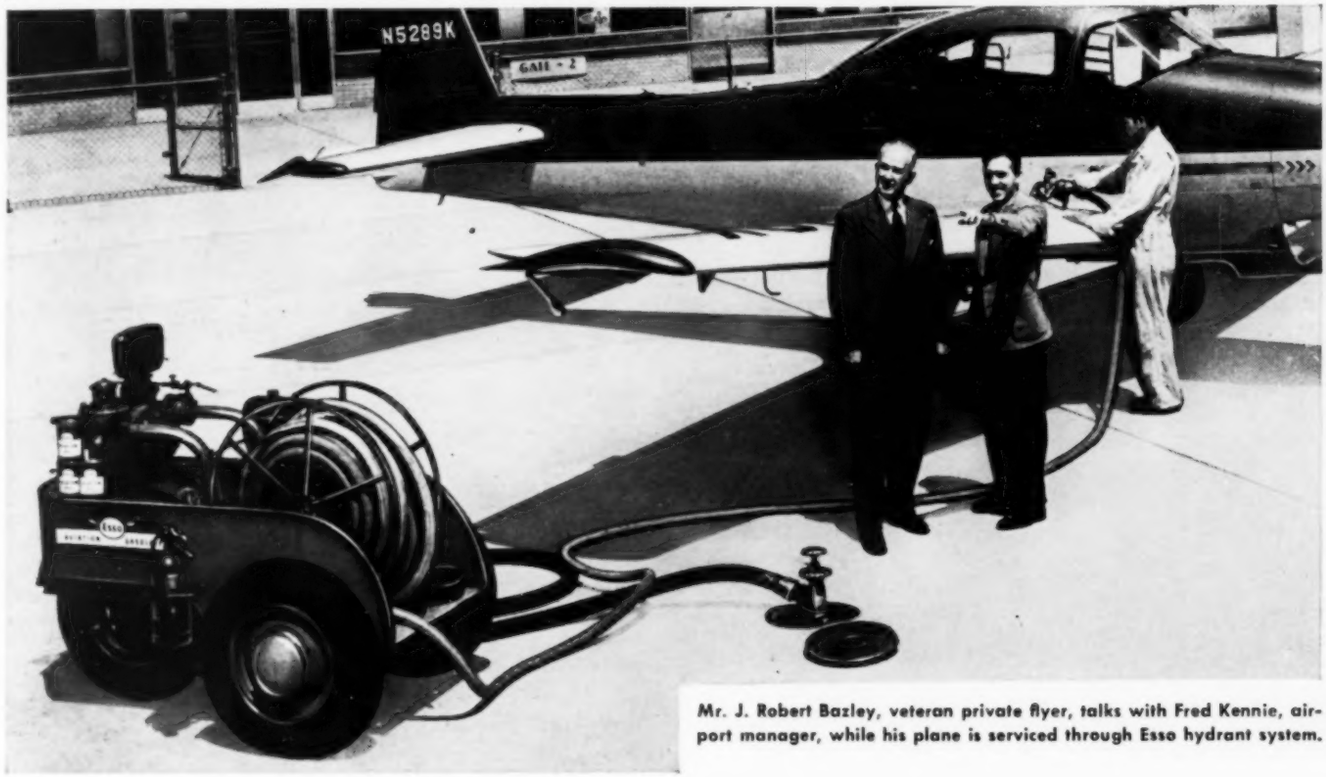

Mr. J. Robert Bazley, veteran private flyer, talks with Fred Kennie, airport manager, while his plane is serviced through Esso hydrant system.

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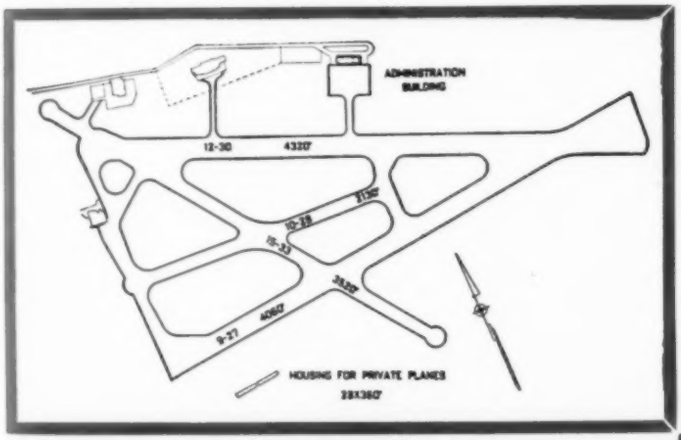

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Covering 227 acres this airport has an elevation of 529 feet above sea level. There are two lighted, concrete runways 4320 and 4060 feet in length with two additional black-top runways of 3520 and 2130 feet. The field is lighted.

The new Administration Building has 15000 feet of floor space and houses airline passenger, airmail, freight and express facilities, and a complete restaurant. The Interstate Airway Communications (call letters IPT) and the United States Weather Bureau also maintain stations in this building.

Mr. Bazley, pictured above at the new Williamsport Administration Building, has been an Esso user for nearly 20 years. In addition to having his plane serviced with Esso Aviation Products, Mr. Bazley, as one of the country's largest anthracite stripping and highway contractors, uses Esso Products exclusively for his trucks and other machinery. In the skyway or on the highway, Mr. Bazley knows he can depend on the products that carry the Esso trade-mark.

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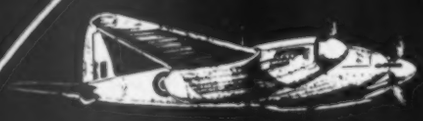

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